SD INTEGRATED (P) Ltd

Reg. Office : 10, First Floor, Johnson Towers, Gorakhpur, Jabalpur - 482 002, (M.P.) India

- CIN: U40106MP2016PTC0869
- MSME UAN: UDYAM-MP-24-0007644

GST IN: 23AAXCS5385C2ZY
Mobile: +91 87708 97703/05/07

Power Audit Certificate

Awarded to: St. Aloysius College (Autonomous), Jabalpur

Audit Period: 2021-2022

Overview:
The Power Audit for the academic year 2021-2022 assessed the college's energy usage, identifying significant opportunities for efficiency improvements. The total power consumption was 961.842 kW under full load.

Recommendations:

- Upgrade to LED lighting to reduce power consumption.
- Improve earthing systems for safety and efficiency.

Issued by:

SD Integrated Private Limited

Prakash Sarathe
Place: Jabalpur

Date of Issue: 23rd November 2022

SF-117, Samvet Shikhar Complex, Rajbandandha Ground, Raipur, - 492001 (C.G.) India
Email : sd.integrated@gmail.com Web. : www.sdintegrated.co.in

ST. ALOYSIUS' COLLEGE
(AUTONOMOUS), JABALPUR(M.P.)
Reaccredited ' A+ ' Grade by NAAC (CGPA 3.68/4.00)
College with Potential for Excellence (CPE) by UGC
DST-FIST Supported & Star College Scheme by DBT.

Power Audit

2021-22

The Power Audit Report for St. Aloysius College for the academic year 2021-22 was compiled by Dr. Pramod Chaitanya, Head of Physics, Dr. Poonam Pandke, Assistant Professor of Physics, and Mr. Swapnil Justin, Assistant Professor of Computer Science. The audit meticulously gathered and analyzed data regarding the electricity consumption of every classroom, laboratory, and appliance on campus to enhance the institution's energy efficiency. This initiative is part of the college's broader commitment to energy conservation and sustainability, aiming to reduce consumption and integrate renewable energy sources. The findings from this audit will guide the development of strategies to achieve these goals effectively.

Head of the Dept of ...
St. Aloysius' College,
JABALPUR

P. Pendke

PRINCIPAL
St. Aloysius College (Autonomous)
JABALPUR- 482001 (M.P.)
INDIA

1, AHILYA BAI MARG, PENTINAKA CHOWK, SADAR, CANTT, JABALPUR, MADHYA PRADESH, INDIA 482001
+917612620738
info@staloysiuscollege.ac.in

ST. ALOYSIUS' COLLEGE
(AUTONOMOUS), JABALPUR(M.P.)
Reaccredited ' A+ ' Grade by NAAC (CGPA 3.68/4.00)
College with Potential for Excellence (CPE) by UGC
DST-FIST Supported & Star College Scheme by DBT.

Preface

For the purpose of conducting a power audit at St. Aloysius College (Autonomous), Jabalpur, Madhya Pradesh, a collection of data covering the period of July 2021 to June 2022 was carried out. This audit was conducted with the intention of determining whether or not it would be convenient to advance the campus's energy competency. The information was gathered from each classroom, laboratory, and appliance across the campus as well as the hallways. The process included the number of electrical and electronic present in each room with overall amount of electricity consumption. The administration of St. Aloysius College (Autonomous) makes every effort to raise people's consciousness about the importance of reducing energy consumption and promoting the use of renewable sources of power like solar energy.

1, AHILYA BAI MARG, PENTINAKA CHOWK, SADAR, CANTT, JABALPUR, MADHYA PRADESH, INDIA 482001
+917612620738
info@staloysiuscollege.ac.in

Aims and Objectives of Power Audit

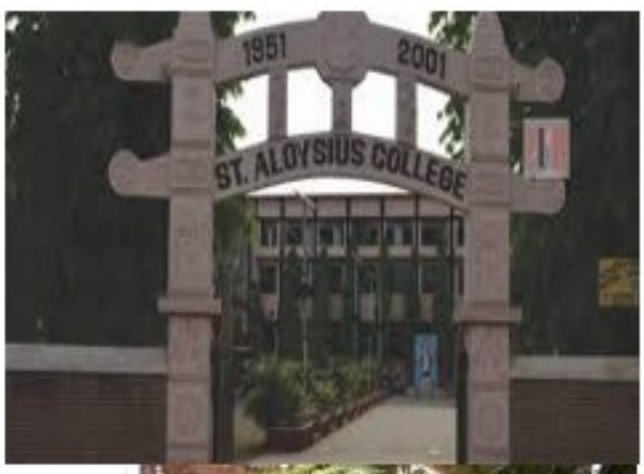
In order to complete the Power Audit, information was gathered by conducting a survey of the building and its electrical appliances. An audit of the power system was carried out with the intention of developing and implementing extensive energy management plans at the institute. It was accomplished by identifying power-saving chances for less power consumption, and it has assisted in understanding how to cut expenses and energy consumption and avoid unnecessary energy consumption. It was accomplished by identifying power-saving opportunities for less power consumption.

1, AHILYA BAI MARG, PENTINAKA CHOWK, SADAR, CANTT, JABALPUR, MADHYA PRADESH, INDIA 482001
+917612620738
info@staloysiuscollege.ac.in

ST. ALOYSIUS' COLLEGE
(AUTONOMOUS), JABALPUR(M.P.)
Reaccredited ' A+ ' Grade by NAAC (CGPA 3.68/4.00)
College with Potential for Excellence (CPE) by UGC
DST-FIST Supported & Star College Scheme by DBT.

Introduction

The Power Audit is a thorough inspection of the building's electrical systems and the gathering of relevant data. The information gathered was used to create a comprehensive report that describe the existing energy use patterns and list potential avenues for savings. It allowed for the detection of free or low-cost energy-saving opportunities and the discovery of electric and mechanical infrastructure upgrades with the greatest return on investment. The institute proposes and performs a yearly power audit to check that it is adhering to best practices for reducing its energy consumption. The audit provides recommendations for turning conservation concepts into actions, balancing technical viability with economic and other organizational factors within a set time limit. Power audits are conducted to find ways to lessen the amount of energy needed to produce a product or to cut down on operational expenses.



1, AHILYA BAI MARG, PENTINAKA CHOWK, SADAR, CANTT, JABALPUR, MADHYA PRADESH, INDIA 482001
+917612620738
info@staloysiuscollege.ac.in

Observation and Analysis

The data collected was analyzed and then interpreted. The energy consumed was measured block-wise and then the data is represented graphically also.

Load Details:

The structure of St. Aloysius College, Jabalpur can be divided into three floors, each floor consisting of various class-rooms, Laboratories, Library, Reading room, and rooms allotted for various extra-curricular activities like Sports, Health Club, NCC and NSS. In the following load survey we are estimating the approximate power consumption if the college is running on full load i.e. load that the college would be using in case all the appliances are operational at the same time.

LIBRARY

CONFERENCE ROOM

AUDITORIUM-PRERNA

SPORTS ROOM

READING ROOM

The estimation of the approximate power consumption is mentioned here

1, AHILYA BAI MARG, PENTINAKA CHOWK, SADAR, CANTT, JABALPUR, MADHYA PRADESH, INDIA 482001
+917612620738
info@staloysiuscollege.ac.in

ST. ALOYSIUS' COLLEGE

(AUTONOMOUS), JABALPUR(M.P.)

Reaccredited ' A+ ' Grade by NAAC (CGPA 3.68/4.00)
College with Potential for Excellence (CPE) by UGC
DST-FIST Supported & Star College Scheme by DBT.

Power Consumption Data

S.No.	Appliances'		Total No.	Wattage (per Appliance)	Consumption (KW)
1	Celling Fans		324	60	116.64
2	Wall Fans		25	100	15
3	Pedestal Fans		2	100	1.2
4	Exhaust Fans		15	60	5.4
5	Tube Lights		135	40	32.4
6	Street Lights		2	25	0.3
7	LED Bulb		263	9	14.202
8	LCD TV		6	150	5.4
9	Computers (Lab+ Office + online Classes)		280	100	168
10	Printers		45	250	67.5
11	Projector		35	100	21
12	AC		21	1600	201.6
13	Xerox Machine		6	1000	36
14	Water Cooler		6	250	9
15	Water Filter		5	600	18
16	CCTV Camera		160	80	76.8
17	Water Pump		2	2100	25.2
18	Microwave		5	1000	30
19	Electrical Kettle		8	1500	72
20	Refrigerators		6	80	2.88
21	Deep Freezer		3	1000	18
22	Induction		1	1500	9
23	PA System(Prerna)		1	250	1.5
24	PA System(Staff Room, Physics & CS Lab)		3	80	1.44
25	Home Theater		2	40	0.48
26	Room / window Coolers		7	250	10.5
27	Miscellaneous (Various scientific instruments at central lab)		2	200	2.4
	Total Consumption (KW)				961.842

1, AHILYA BAI MARG, PENTINAKA CHOWK, SADAR, CANTT, JABALPUR, MADHYA PRADESH, INDIA 482001
+917612620738
info@staloysiuscollege.ac.in

ST. ALOYSIUS' COLLEGE

(AUTONOMOUS), JABALPUR(M.P.)

Reaccredited ' A+ ' Grade by NAAC (CGPA 3.68/4.00)

College with Potential for Excellence (CPE) by UGC

DST-FIST Supported & Star College Scheme by DBT.

GRAPH

1, AHILYA BAI MARG, PENTINAKA CHOWK, SADAR, CANTT, JABALPUR, MADHYA PRADESH, INDIA 482001

+917612620738

info@staloysiuscollege.ac.in

Measurements & Observations in Earthing system:

Earth resistance testing is carried out for different equipment & distribution board in college premises by earth tester. Test results are tabulated as under:

S.No.	Location/Equipment	Earth Resistance Value in Ohms (Ω)	Remark	Recommendation
1	DG Body (40 KVA)	40	Earth resistance is a bit higher	Earthing network connection should be checked & corrected for the proper connection from equipment to earth pit & salt water can be added to earth pit for improving earth resistance.
2	Earth Neutral	0.47		
3	DG Body Earth Pit	4.65		

Besides this a DG set of capacity 40kVA/36kW/62.6A has been installed in the campus for back up during power loss. But as load is unbalanced and non-linear, DG set should not be run above 80% of its capacity i.e.28.8kW for reliable operation. The following chart approximates the fuel consumption of a diesel generator based on the size of the generator and the load at which the generator is operating at. The table is an estimate of how much fuel a generator uses during operation and is not an exact representation due to various factors that can increase or decrease the amount of fuel consumed.

Generator Size (kVA)	Generator Size (kW)	1/4 Load (ltr/hr)	1/2 Load (ltr/hr)	3/4 Load (ltr/hr)	Full Load (ltr/hr)
40	36	3.4	5.8	7.9	9.9

Testing of Earth Continuity at different Plug points.

Testing of Earth Continuity at different Plug points is carried out on sample basis and results are tabulated as under:

Following Colour Coding is used to indicate Correction work priority

Priority	Colour Code
High	
Medium	
Low	

Power Measurements at Main Incomer

PhaseVoltage Measurements			Current Measurements			kW / Phase			Total Load
R	Y	B	R	Y	B	R	Y	B	In kW
230	230	230	50.8	49.5	57.1	16.2	15.8	18.2	50.2
228	229	229	52.9	48.5	55.5	16.7	15.4	17.6	49.7
228	230	230	54.4	49.3	57.4	17.2	15.7	18.3	51.2
Average Load in kW									**50.4**

Conclusion

The audit has highlighted significant areas for energy optimization. By analyzing energy consumption across various campus facilities, the audit has laid the groundwork for implementing more robust energy management strategies. This approach not only aims to reduce energy costs but also supports the college's commitment to environmental sustainability, setting a precedent for future energy conservation initiatives.