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Certificate of Power Audit Completion

This certificate confirms that St. Aloysius College has successfully completed the Power Audit for the academic year 2020-2021. The audit assessed the college's power consumption, electrical safety, and efficiency practices, demonstrating compliance with best practices in energy management.

Period of Audit: 2020-2021

Audit Overview: The Power Audit involved a thorough examination of the college's electrical systems across various facilities including classrooms, laboratories, and administrative areas. Key aspects of the audit included:

- **Load Analysis:** Total power consumption under full load was calculated to be 956.652 kW.
- **Equipment Testing:** Comprehensive testing of earthing systems, continuity checks, and phase voltage measurements were conducted.
- **Efficiency Assessments:** Evaluation of the operational efficiency of key electrical appliances and systems.

Key Findings:

- **Total Power Consumption:** 956.652 kW under full load conditions.
- **Major Contributors:** Air conditioning units, computers, and lighting systems.
- **Recommendations for Improvements:** Enhancements in earthing systems, upgrading lighting to LED, and implementation of energy-efficient practices.

Commendations: St. Aloysius College is commended for its proactive approach to managing power consumption and its efforts towards improving energy efficiency and safety on campus.

Certificate Issued by:

SD Integrated Private Limited

Prakash Sarathe
Place: Jabalpur



Date of Issue: 5th November, 2021



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 Report

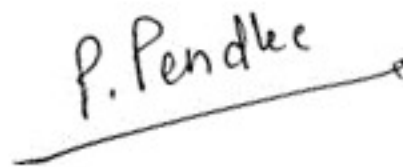
2020-21

The Power Audit Report for St. Aloysius College, Jabalpur, for the academic year 2020-21, prepared by Dr. Pramod Chaitanya, Dr. Poonam Pandke, and Dr. Swapnil Justin, evaluates the electrical power consumption of the college. This audit catalogues the electrical loads from various devices such as ceiling fans, computers, air conditioning units, and other electrical appliances, amounting to a total consumption of 956.652 kW under full load conditions.

The assessment also includes an analysis of the earth resistance values at several equipment locations, noting specific areas where improvements may be needed to ensure safety and compliance with standards. Detailed measurements were taken at plug points to ensure voltage consistency and to identify any potential issues that may impact the efficiency of electrical distribution.

This examination is essential for maintaining a reliable and efficient power system within the college's infrastructure. The findings from this audit have been compiled and submitted to Awaneesh Nema and Associates for audit verification.


Head of the Dept of Physics,
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JABALPUR


P. Pandke




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Power Audit Report

of

**St. Aloysius College (Autonomous),
Jabalpur, M.P.**

www.staloyuscollege.ac.in

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. The estimation of the approximate power consumption is mentioned here



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Percentage Share of Different Load

The total power consumption in case of full load comes out to be 956.652 KW. The percentage contributions towards total load by the various appliances are depicted in the following bar-chart:

S.No.	Appliances'	Total No.	Wattage (per Appliance)	Consumption (KW)
1	Celling Fans	314	60	113.04
2	Wall Fans	25	100	15
3	Pedestal Fans	02	100	1.2
4	Exhaust Fans	15	60	5.4
5	Tube Lights	125	40	30
6	Street Lights	02	25	0.3
7	LED Bulb	278	9	15.012
8	LCD TV	6	150	5.4
9	Computers	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)				956.652



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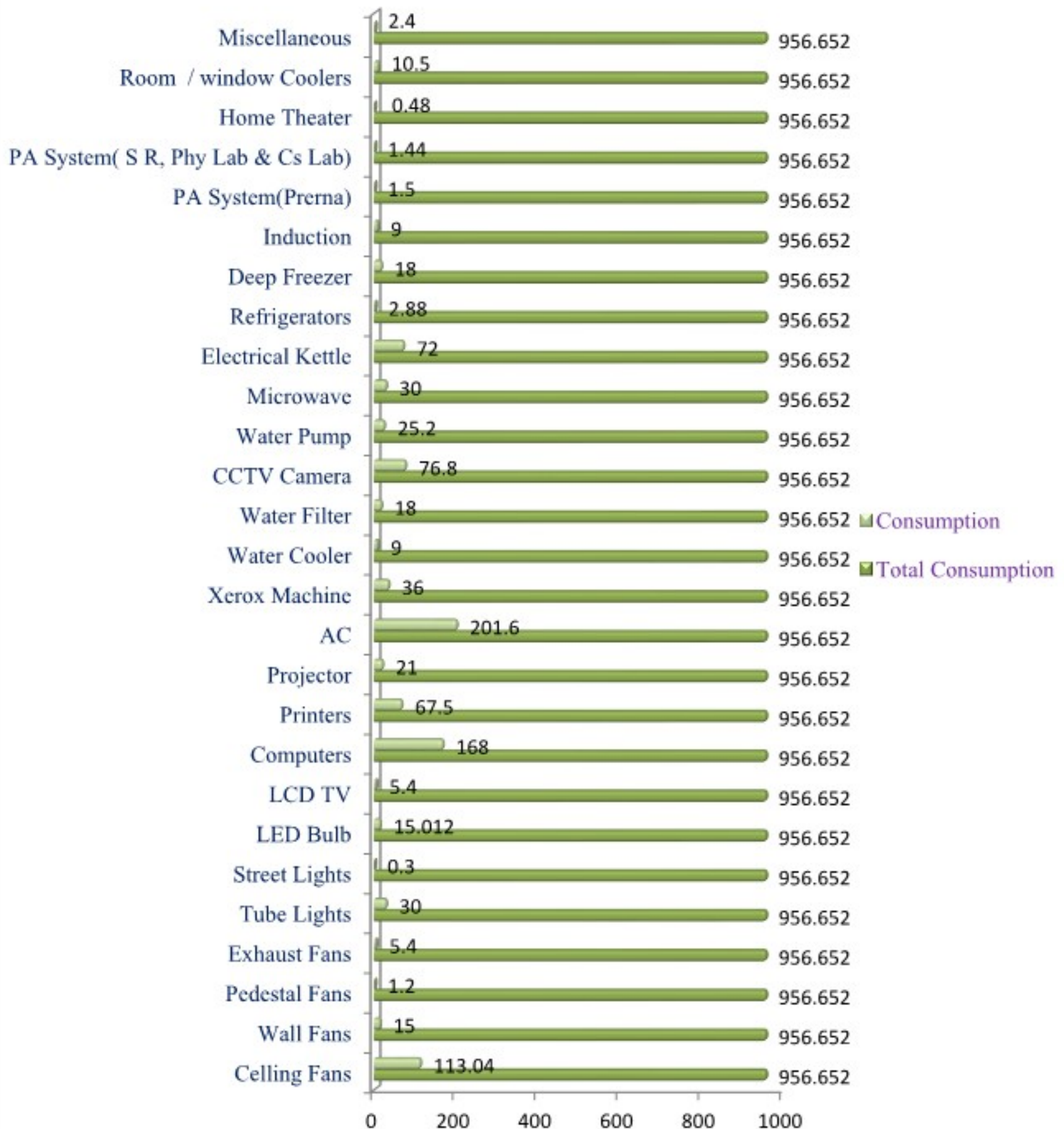
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Power Consumption



PA System (S.R., Phy Lab & CS. Lab) ---- PA System (Staff Room, Physics Lab & Computer Lab)



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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	Earthresistance 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:



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Following Colour Coding is used to indicate Correction work priority

Priority	Colour Code
High	Red
Medium	Yellow
Low	Blue

Phase Voltage Measurements			Current Measurements			kW / Phase			Total Load In kW
R	Y	B	R	Y	B	R	Y	B	
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

Power Measurements at Main Incomer

Conclusion: The Power Audit of St. Aloysius College has highlighted key areas for enhancement within the campus's energy infrastructure. The findings show substantial power consumption across various facilities, emphasizing the necessity for ongoing monitoring and management of energy usage to ensure operational efficiency and sustainability. The audit serves as a step toward identifying and understanding energy dynamics within the college, aiding in strategic planning for future energy conservation measures.



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