SD INTEGRATED (P) Ltd

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Certificate of Power Audit Completion

Awarded to St. Aloysius College, Jabalpur, in recognition of successfully completing the Power Audit for the academic year 2019-2020, demonstrating a commitment to energy efficiency and proactive management of electrical resources.

Period: 2019 - 2020

Audit Overview: The Power Audit was meticulously carried out across the three floors of the college, encompassing various classrooms, laboratories, and activity rooms. The audit provided a comprehensive evaluation of the power consumption under full load conditions, assessing the energy usage of essential electrical appliances and systems throughout the college.

Key Findings:

- **Total Power Consumption:** 953.6 kW
- **Major Contributors:** Air conditioning units, computers, printers, ceiling fans, and laboratory equipment.
- **Efficiency Recommendations:** Suggestions for improving energy efficiency include enhancing earthing systems, upgrading to LED lighting, and implementing automated power management systems.

Commendations: The audit team commends St. Aloysius College for its efforts in maintaining a rigorous approach towards energy management and for its initiatives in promoting sustainability on campus.

Certificate Issued by:

SD Integrated Private Limited

SD INTEGRATED PRIVATE LIMITED

Prakash Sarathe
Place: Jabalpur

Date of Issue: 28th December, 2020

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
2019-20

We are pleased to submit the Power Audit Report for St. Aloysius College for the academic year 2019-20. This comprehensive report, prepared by Dr. Pramod Chaitanya, Dr. Poonam Pendke, and Mr. Swapnil Justin, details the college's power consumption practices and the implemented energy management protocols.

Key aspects of the report include:

- Detailed analysis of power consumption across various college facilities, ensuring all devices and appliances operate efficiently.
- Evaluation of energy usage in class rooms, laboratories, and activity areas under full load conditions.
- Assessment of our environmental safety standards, focusing on water conductivity, air quality, and hazardous waste management in college laboratories.

Additionally, the report outlines our efforts towards creating a sustainable and eco-friendly academic setting, with a strong emphasis on reducing energy consumption through various eco-friendly initiatives such as LED lighting and efficient cooling systems.

This audit is submitted to Awaneesh Nema and Associates for further review.

P. Pendke

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

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Power Audit Report

Load Details:

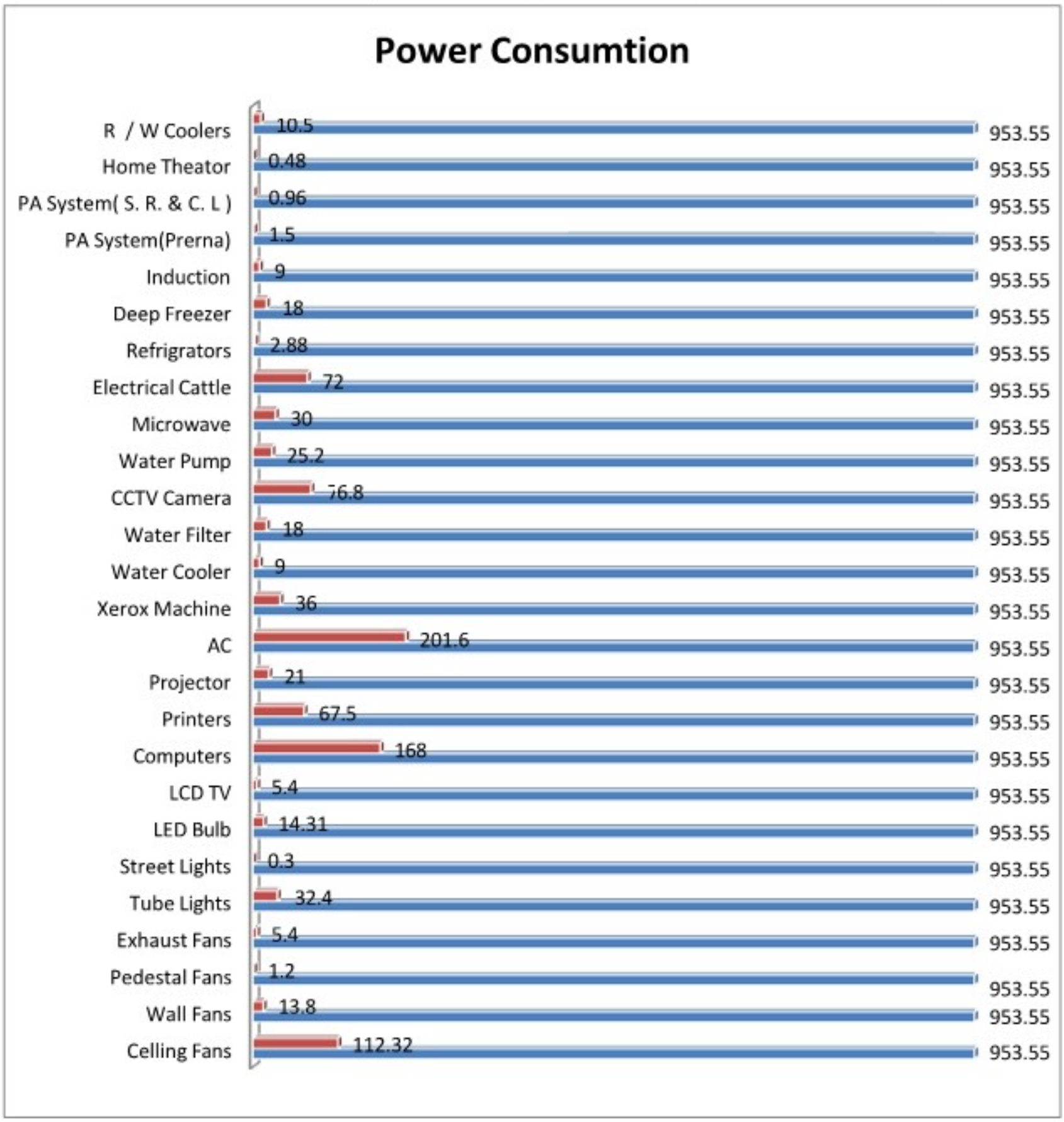
The structure of St. Aloysius College, Jabalpur can be divided into three floors, each floor consisting of various class-rooms, laboratories and rooms allotted for various extra-curricular activities like sports and NCC. In the following load survey, we are estimating the approximate power consumption 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 by various class rooms and laboratory is mentioned here

S.No.	Appliances'	Total No.	Wattage (per Appliance)	Consumption (KW)
1	Celling Fans	312	60	112.32
2	Wall Fans	23	100	13.8
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	265	9	14.31
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	30.0
20	Electrical Kettle	8	1500	72
21	Refrigerators	6	80	2.88
22	Deep Freezer	3	1000	18
23	Induction	1	1500	9
24	PA System (Prerna)	1	250	1.5
25	PA System (Staff Room & Computer Lab)	2	80	0.96
26	Home Theater	2	40	0.48
27	Room / window Coolers	7	250	10.5

Percentage Share of Different Load

The total power consumption in case of full load comes out to be 953.6 kW. The percentage contributions towards total load by the various appliances are depicted in the following bar-chart:



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	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 Power Audit Report for St. Aloysius College for the academic year 2019-20 has meticulously documented the college's energy consumption across various facilities, with a total potential load of 953.6 kW under full operational conditions. Key findings include substantial energy usage by air conditioning and computing equipment, highlighting areas for improvement in energy efficiency and sustainability practices.

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