



SARIYA COLLEGE, SURIYA

ENERGY AUDIT REPORT

2025-2026

Prepared By :
EHS ALLIANCE



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CERTIFICATE



CERTIFICATE

PRESENTED TO

SARIA COLLEGE SURIA

That has been assessed by EHS Alliance for the comprehensive study of Energy Audit on institutional working framework to fulfill the requirement of

ENERGY AUDIT

ACADEMIC YEAR 2025-26

The energy-saving initiatives carried out by the institution have been verified in the report submitted and were found to be satisfactory.

The efforts taken by management and faculty towards all types of energy used in the institution and sustainability are highly appreciable and noteworthy.

SIGNATURE



07.05.2026
DATE OF AUDIT

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ACKNOWLEDGEMENT

EHS Alliance Services would like to thank the management of Suriya College, Suriya for assigning this important work of Energy Audit. We appreciate the co-operation to the teams for completion of assessment.

First of all, we would like to thank **Mr. Manohar Singh Bagga - Secretary** and **Dr. Santosh Kumar Lal - Principal** for giving us an opportunity to evaluate the environmental performance of the campus.

We would also like to thank **Dr. Pramod Kumar - Assistant Professor and Audit Coordinator** for his continuous support and guidance, without which the completion of the project would not have been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to

Mr. Asit Diwakar
Dr. Ashish Kumar Singh

IQAC
Coordinator
NSS Program Off





DISCLAIMER

EHS Alliance Services Energy Audit Team has prepared this Energy Audit Report for Sariya College based on input data submitted by the representatives of college complemented with the best judgment capacity of the expert team.

While all reasonable care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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Vijay Singh
Lead Auditor EMS & Energy

Dr. Uday Pratap
Co-Auditor EMS & Energy



ABBREVIATION

A	Amps
AC	Air Conditioner
AC	Alternating Current
AMET	Academy of Maritime Education and Training
CFL	Compact Fluorescent Lamp
CIP	Comprehensive Inspection Program
DC	Direct Current
HSD	High Speed Diesel
Hz	Hertz
kg	Kilogram
kVA	Kilo-Volt-Ampere
kW	kilo Watts
kWh	Kilowatt Hour
kWp	Kilowatt Peak
LED	Light Emitting Diode
LPG	Liquefied Petroleum Gas
MMS	Module Mounting Structure
MPPT	Maximum Power Point Tracker
NAAC	The National Assessment and Accreditation Council
SEC	Specific Energy Consumption
SPV	Solar Photovoltaic
STC	Standard Test Condition
TV	Television
V	Volts
W	Watts
W/m²	Watt Per Square Meter



OVERVIEW OF THE COLLEGE

Sariya College, Suriya a premier institution for Co- education at Sariya, Giridih District in the State of Jharkhand. It is a Permanently Affiliated. College of Vinoba Bhave University, Hazaribag. It was founded in the year 1984 with an aim to impart higher education to the rural students. The dreams of the poor students who are deprived of higher education have been translated into reality by this glorious institution. Our college caters to the academic and professional needs of boys & girls not only from Sariya but also from adjoining rural areas and nearby states.



The State Govt. and the university provided temporary affiliation in Arts, and Commerce faculties from the session 1984-85 then from the session 2011-14 the State Govt. and Vinoba Bhave University, Hazaribag provided Permanent Affiliation to the college in the faculty of Arts (General), and Commerce up to Honours & General level. Sariya College is registered under society registration act- and is also registered under section 2(F) and 12(b) of UGC of Govt. of India.





Sariya college was inaugurated with a clear vision that it would pursue excellence and provide higher education to the people of this rural and economically deprived section. The college sensitizes its students on gender and environmental issues through its curriculum celebrating national and international days organizing awareness/ through seminars, symposium, drama, quiz competition etc. The college has developed to an ideal campus with building. It has well-furnished classroom, library and departments. The college is having sufficient number of computers in the computer lab and different types of educational aids like smart board, projectors etc. The college has highly qualified and experienced faculty members and experienced non-teaching staff.



The college is situated in the beauty of nature and road side of Suriya-Bagodar Road and three K.M. far away from Suriya main town. The college is surrounded by forests on three sides. The college is now the natural choice and preferred destination for students from different +2 high schools or Inter colleges to pursue quality education. The college has an excellent infrastructure and accessibility from various parts of the state. The distance to the college from Hazaribag Road Railway station is 3.5 k.m. The college has a well-designed administrative block and various other rooms and facilities for the students such Girls common room, Boys common room, Divyangjan common room. It has provided well equipped furnished labs for Geography. Each subject of students has separate class rooms. Class rooms are well furnished and ventilated. Class rooms are is provided with all teaching aids like Black board, White board, Interactive board, Projector etc. in order to ensure overall development of students. The students have all the facilities for games and sports. A canteen with vegetarian is also available in the college campus. The college building has Multipurpose Hall also. There are two buildings in college campus. The main infrastructure facilities are as follows: Transport Facility: College Bus for Girls students Library and Information centre: More than 6000 volume of books and journal with Infilbnet, e remote access, e-library etc. College Canteen-Vegetarian Internet centre-Wi-Fi facility in computer lab Teaching staff: Excellent teaching faculty with highly qualified and well experienced staff Practical lab: For Geography and other subjects Ground floor: Class rooms, Principal office, IQAC room, Staff common room, Examination room, NSS office, Administrative office, CCTV monitoring, Playground, Electricity room, Canteen, Water Harvesting System, Beautiful



Garden, Multipurpose Hall, Differently abled friendly campus, Medical support facility, Boys Common room & Others First Floor: Class rooms, Girls common room, store room & Others Second Floor: Library, Computer Lab, English Language Lab, Class rooms, Smart class, Solar Panel & Others. Beside these Green initiative, Common Toilet and Urinal, Playground, Vocational study centre, Huge Parking facility, Compost system, Security personnel & Others.

MISSION

The mission of Sariya College is to educate the citizens and citizens-leaders for our society. We do this through our commitment to the transformative power of higher education in Arts, Science and Commerce. Beginning in the classrooms with exposure to new ideas, new ways of understanding and new ways of knowing, students embark on a journey of intellectual transformation.

- To build the nation by creating a class of moral, intellectual and committed citizens
- To strengthen the human resources
- To provide Indian knowledge and values along with modern knowledge and values
- To intellectual academic excellence, social responsibility, moral uprightness and team spirit
- To train students physically intellectually, socially, morally, emotionally, vocationally to attain
- To contribute to society through the pursuit of education, learning at the highest levels of excellence.
- To provide quality education through academic cultural and physical activities and prepare the students as responsible and useful citizens.

VISION

Enrichment of academic and socio-cultural experiences of students through quality higher education. The college intends to become a pioneer institution and create an ecosystem for imparting quality higher education, research, and innovation with available resources and utilizing manpower and modern technology to develop skilled citizens who can earn a livelihood, contribute qualitatively to family, society, and being infused with patriotism who is committed for the development of the nation.

VALUES

Sariya college ,suriya in a process of self and community reflection that would lead us to recognize and heighten awareness of the higher values we and our institution have already practiced and articulated, to seek agreement about those values, and to develop an institutional culture that holds itself accountable to those values.



Facilities in the campus

Amenities at Sariya College provide far more than academic and administrative facilities on campus. It is dedicated to provide students with an exceptional infrastructure for learning as well as facilities for simplifying the procurement of fundamental skills. To accomplish the goal, Sariya College offers the following:

LIBRARY: The Library of Sariya College, Suriya is fully automated with a wide-ranging collection of over Five thousand books of various disciplines. The library subscribes to a total number of 6 newspapers and 8 magazines. Library has a collection of various reference sources such as encyclopedias, dictionaries, atlas, yearbooks etc. The library also provides access to about Five e-journals. The library has a reading room facility with computer, Xerox machine and internet facility and INFLIBNET. The library has a reading room with a seating capacity of 80 students and digital library facility with a seating capacity of 20 students. They have computer with internet facility of e-library and e-journals.

SMART CLASSROOMS & COMPUTER LABS: Some department classroom in the college is ICT enable with laptops, projectors. The teachers provide digital education for students. To import computer education to the students, a computer lab has been established in the college in which 20 computers have been installed.





Geo Coordinates from Google maps: 24.1501097, 85.8721568

AUDIT PARTICIPANTS

On behalf of the college

Name	Designation
Mr. Manohar Singh Bagga	Secretary
Dr. Santosh Kumar Lal	Principal
Dr. Pramod Kumar	Assistant Professor and Audit Coordinator
Mr. Asit Diwakar	IQAC Coordinator
Dr. Ashish Kumar Singh	NSS Program Officer
Mr. Sitaram Suman	Accountant

On behalf of EHS Alliance Services

Name	Position	Qualifications
Mr. Vijay Singh	Lead Auditor	M.Sc. M. Tech (Environment Science & Engineering), Energy Auditor, Post Diploma in Industrial Safety Management
Dr. Uday Pratap	Co-Auditor	Ph.D., EMS: Lead Auditor ISO14001:2015, QCI-WASH



EXECUTIVE SUMMARY

The purpose of this Energy Audit was to seek opportunities to improve the energy efficiency of the Sariya College. Reducing the energy consumption despite improving the human comfort, health and safety were of primary concern.

Beyond just identifying the energy consumption pattern, this audit sought to detect and categorize the most energy efficient appliances. Additionally, some daily practices relating common appliances have been shared which may help reducing the energy consumption. Data collection for energy audit of the campus was carried out by the EHS Alliance Team. The Energy Audit Report accounts for the energy consumption patterns of the institution on actual survey and detailed analysis during the audit.

The work comprehends the area wise consumption traced using suitable equipment. The analysis was carried out by our team with the support of the staff members from Sariya College. The report provides a list of possible actions to preserve and efficiently access the available source, resources and their saving potential was also identified. We look forward towards optimization that the authorities, students and staff members would follow the recommendations in the best possible way. The report is based on certain generalizations including the approximations wherever necessary. The views conveyed may not reveal the general opinion. They merely represent the opinion of the team guided by the interviews of clients. We are happy to submit this Energy audit report to the Sariya College.

ENERGY AUDIT - ANALYSIS

1. ENERGY CONSUMPTION

To understand the Energy Consumption trends and to analyze the average monthly consumption we have collected electricity energy bills from July 2025 to June 2026.

The details of “**Meter Connection**” at “**Sariya College**” are as follows-

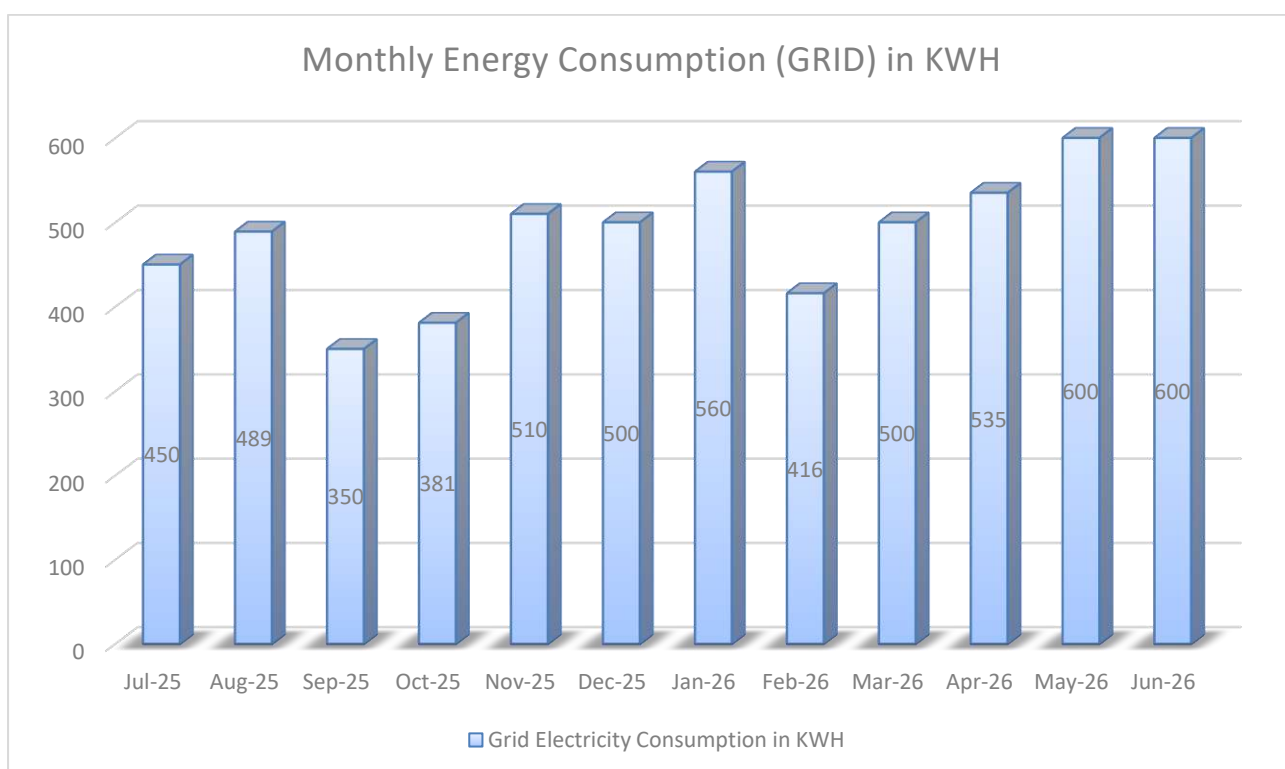
Name	-	Sariya College, Suriya
CA No.	-	SR04925



1.1 SUMMARY OF MONTHLY ELECTRICITY CONSUMPTION AND TOTAL BILL AMOUNT

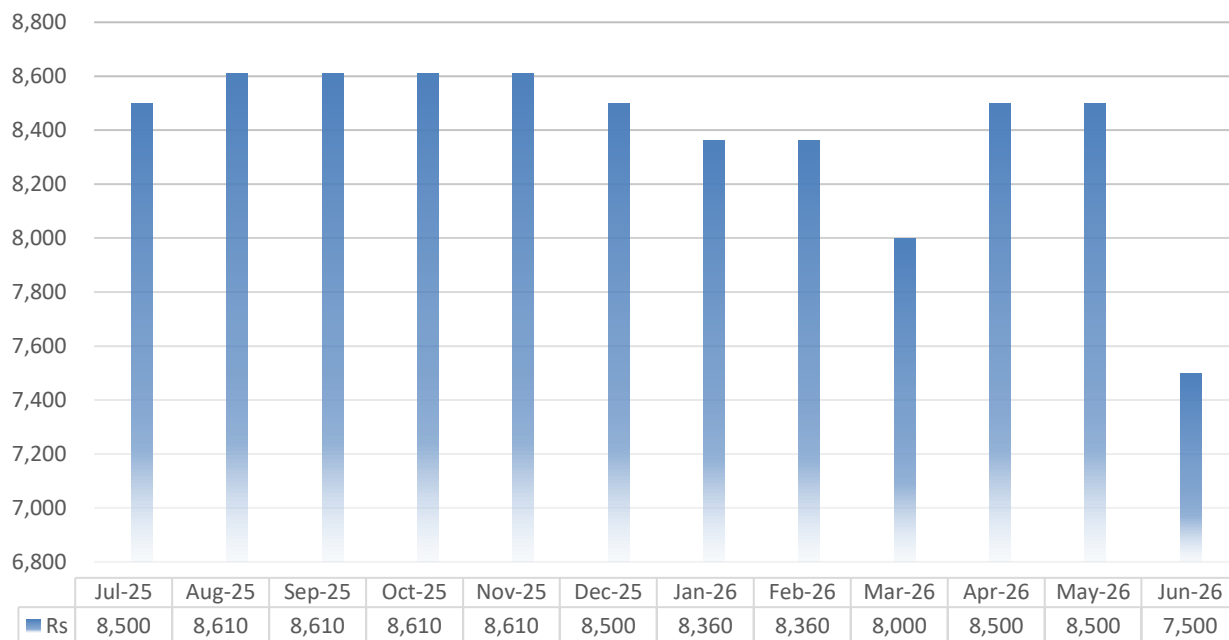
To understand the Energy consumption trend and for developing the baseline parameter we have collected monthly energy bill for the 12 months i.e. from July 2025 to June 2026

Month	Grid Consumption (kWh)	Net Consumption	Solar P V	Total	Rate INR	Amount in INR
Jul-25	450	900	450	1,350	10.00	9,000
Aug-25	489	939	450	1,389	10.00	9,390
Sep-25	350	800	450	1,250	10.00	8,000
Oct-25	381	831	450	1,281	10.00	8,310
Nov-25	510	960	450	1,410	10.00	9,600
Dec-25	500	950	450	1,400	10.00	9,500
Jan-26	560	1010	450	1,460	10.00	10,100
Feb-26	416	866	450	1,316	10.00	8,660
Mar-26	500	950	450	1,400	10.00	9,500
Apr-26	535	985	450	1,435	10.00	9,850
May-26	600	1050	450	1,500	10.00	10,500
Jun-26	600	1050	450	1,500	10.00	10,500
Total	5,891	11,291	5,400	16,691		1,12,910





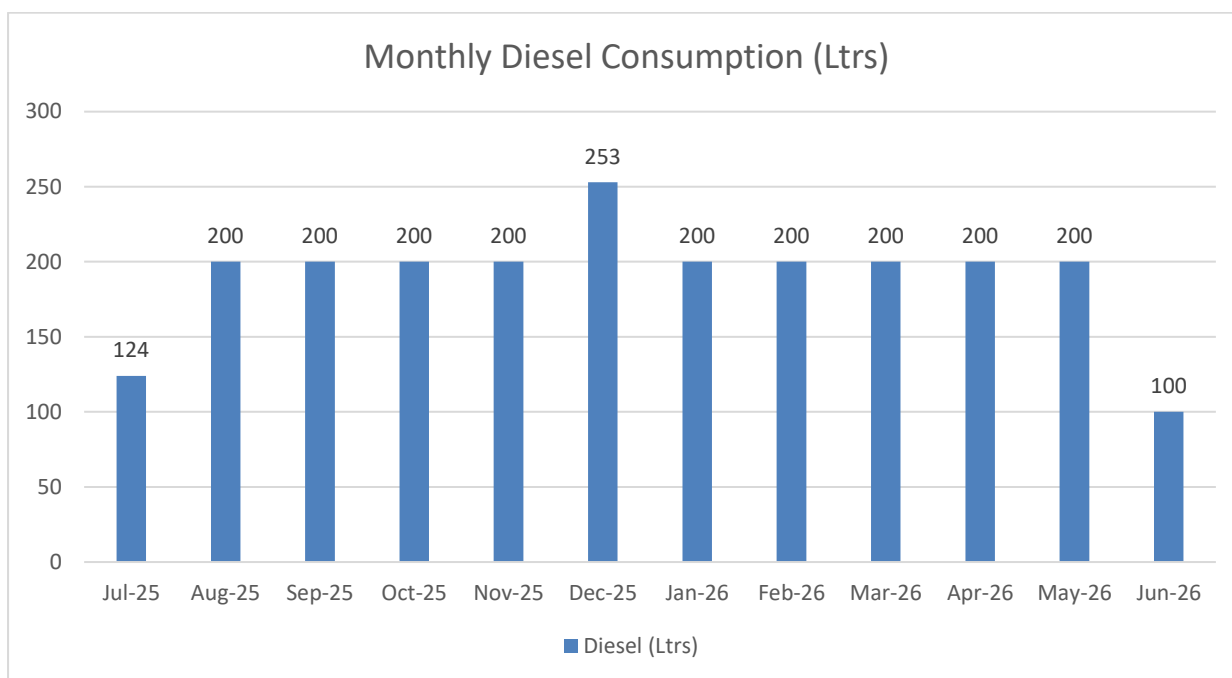
MONTHLY ENERGY CHARGES (INR) - FROM JULY 2025 TO JUNE 2026



2. DIESEL CONSUMPTION

From July 2025 to June 2026, Sariya College has consumed 2,277 liters of fuel. Month wise usage pattern is shown below:

Month	Diesel (Ltrs)
Jul-25	124
Aug-25	200
Sep-25	200
Oct-25	200
Nov-25	200
Dec-25	253
Jan-26	200
Feb-26	200
Mar-26	200
Apr-26	200
May-26	200
Jun-26	100
Total	2,277



3. ANALYSIS OF DG SETS

In the campus, there is only one Diesel Generator (DG) set for its electrical power needs in case of Grid power failure. DG sets capacity is 250 kVA.

DG Set Design Details		
<i>Description</i>	<i>Unit</i>	<i>DG at Station 1</i>
Rated capacity	kVA	5
Hz		50
Sl No.		1500889
Make		Kirloskar
Volts	Volts	220
PF		0.8
Phase		1
RPM		1200
Amps	Amps	21.7
Mfg.		Sep-15

Soundproof silent generators are an efficient tool to keep both noise and vibration at low levels. For the power backup of the institution, the soundproof model is installed in the institution.

We recommend college to initiate stack monitoring of DG set through authorized lab.



4. AC SYSTEM

Energy Efficiency Ratio (EER): The performance of smaller chillers and rooftop units is frequently measured in EER rather than kW/ton. EER is calculated by dividing a chiller's cooling capacity (in Btu/h) by its power input (in watts) at full-load conditions. The higher the EER, the More efficient the unit. The cooling effect produced is quantified as tons of refrigeration (TR). The above TR is also called as air-conditioning tonnage.

There is 1 Split ACs installed in Sariya College in various areas of various capacity which detail is given below: -

Sl No.	Location/ Identification	Type(Window/ Split)	Qty.	T R.	Room Temp. (°C)	AC-Tout (°C)	AC-Tin (°C)	Room-RH (%)	Area (m2)	Air velocity (m/s)	Enthalpy Hout	Enthalpy Hin	Heat Load in TR	KW supplied	(Eff.) Power per Ton (KW/TON)	EER
1	Conference Room	S	1	1.5	24	11	20	52	0.03	2.20	22	38	0.39	0.63	1.61	2.18



The the Energy Efficiency Ratio of AC and the EER of AC is fairly OK. But in the future, you should purchase 5-Star rated inverter-based split AC's because the power consumption of inverter-based BEE 5-Star rated AC's is less than non-star rated AC's.

Also, we recommend Sariya College to organize a periodic maintenance schedule and take corrective actions for insulating of AC's refrigerant lines to protect against energy losses.



5. FANS ANALYSIS

In the Sariya College, there are 68 Ceiling Fans are installed, out of which 62 fans are of 70W and 3 fans are 30W. Detailed inventory is shown below.

Sl. No.	Location/ Identification	Ceiling Fan (Simple) 70W	Ceiling Fan (BLDC) 30W	Bracket Fan 80W	Wall Fan 45W
1	NAAC OFFICE-1	1			
2	NSS Office	1			
3	Geography Class Room	4			
4	Sociology Class Room	4			
6	Exam. Room	1			
7	Staff Common Room	3	1		
8	IQAC Room		1		1
9	Principal Chamber	2	1		
10	Zoology Class Room	4			
11	History Class Room			1	
12	Political Sc. Class Room	6			
13	Economics Class Room	4			
14	Hindi Class Room	6			



15	Girls Common Room	3			
16	Commerce Class Room	3			
17	English Class Room	6			
18	Botany Class Room	4			
20	Library Room	8			
21	Computer Lab	2			
23	Fee Counter	2			
24	Auditorium	7		2	
26	JSOU Office	1			
27	Geography Lab	4			
28	Science Lab	1			
29	Physics Class Room	1			
30	Math. Class Room	4			
31	Conference Room	4			
	TOTAL	66	3	3	1

<i>Total no of Ceiling Fans (60W)</i>	<i>Nos.</i>	<i>0</i>
<i>Total no of Ceiling Fans (70W)</i>	<i>Nos.</i>	<i>62</i>
<i>Total wattage of 50W Ceiling Fans</i>	<i>Watt</i>	<i>0</i>
<i>Total wattage of 70W Ceiling Fans</i>	<i>Watt</i>	<i>4340</i>
<i>Total saving in Wattage after replacement</i>	<i>Watt</i>	<i>2480</i>
<i>Operating hours per day</i>	<i>Hours</i>	<i>8</i>
<i>Operating days per annum</i>	<i>Days</i>	<i>180</i>
<i>Energy charges per unit in Rs.</i>	<i>INR</i>	<i>10</i>
<i>Saving in Rs./annum</i>	<i>INR</i>	<i>35712</i>
<i>Investment INR</i>	<i>INR</i>	<i>124000</i>
<i>Payback period:- Months</i>	<i>YEARS</i>	<i>3.47</i>

Observation and Suggestions: -

In the college, most of the ceiling fans are of 70 W but BEE 5 Star Rated of 30W Ceiling Fans are present in the market. We recommend replacing existing fans with BEE 5 Star rated 30W fans as paying back period is less than 4 years. This upgradation is for upgradation and all future purchases.

Note:- Energy savings will increase or decrease if the operating hours of the machine /equipment are increased or decreased and the payback period will also increase or decrease if the cost of investment (Cost of machine/equipment/accessories of the machine) will increase or decrease because cost of investment is taken on a tentative basis.



6. ANALYSIS OF LIGHTING SYSTEM

6.1 BRIEF DESCRIPTION OF EXISTING SYSTEM

For assessing the energy efficiency of the lighting system, an Inventory of the Lighting System has been noted/collected, with the aid of a lux meter, measurement and documentation of the lux levels at various locations at the working level has been done.

6.2 INVENTORY OF LIGHTING

Sl. No.	Location/ Identification	9W-LED Bulb	50W LED (High Voltage)
1	NAAC OFFICE-1	2	
2	NSS Office	2	
3	Geography Class Room	6	
4	Sociology Class Room	5	
5	Electricity Room	2	
7	Exam. Room	2	
8	Staff Common Room	4	
9	IQAC Room	2	
10	Principal Chamber	5	
11	Common Area	6	
12	Zoology Class Room	5	
13	History Class Room	2	
14	Political Sc. Class Room	6	
15	Economics Class Room	5	
16	Hindi Class Room	6	
17	Girls Common Room	8	
18	Commerce Class Room	6	
19	English Class Room	6	
20	Botany Class Room	4	
21	Conference Room	4	
22	Store Room	2	
23	Library Room	15	
24	Computer Lab	4	
25	Canteen	4	
26	Fee Counter	8	
27	Auditorium	44	1
28	JSOU Office	4	
29	Geography Lab	5	
30	Science Lab	8	
31	Physics Class Room	3	
32	Math. Class Room	4	
33	Common Area	16	
34	Principal Chamber Toilet Room	1	
35	Staff Toilet Room	1	



36	Toilet for Boys and Girls	10	
37	Campus	6	6
	TOTAL	139	7

6.3 LUX MEASUREMENT

Description	Lux	Remark
Class Rooms	120 to 235	Acceptable
Offices	130 to 240	Acceptable
Corridors	35 to 90	Acceptable
Washrooms	45 to 76	Acceptable
Outdoor	36 to 95	Acceptable
Computer Lab	150 to 289	Acceptable
Parking area	45 to 94	Acceptable
Canteen	69 to 185	Acceptable

Observation

The college has initiated an LED-based lighting solution. LEDs save energy, the life span is much greater, and emit virtually no heat.

We recommend increasing motion sensor-based lights in common areas such as libraries, washrooms, corridors, etc. We also recommend using solar lights for open areas like parking, ground, street lights, etc. The table below shows the performance characteristics comparison of all luminaries.

Table - Luminous Performance Characteristics of Commonly Used Luminaries					
Type of Lamp	Lumens/Watt		Colour Rendering Index	Typical Application	Typical Life
	Range	Avg.			
Incandescent	8-18	14	Excellent (100)	Homes, restaurants, general lighting emergency lighting	1000
Fluorescent lamps	46-60	50	Good w.r.t coating (67-77)	Offices, shops, hospitals, homes	5000
Compact fluorescent Lamps (CFL)	40-70	60	Very Good (85)	Hotels, shops, homes, offices	8000-10000
High-pressure mercury (HPMV)	44-57	50	Fair (45)	General lighting in factories, garages,	5000



				and car parking. floodlighting	
Halogen lamps	18-24	22	Excellent (100)	Display, flood lightening, stadium exhibition grounds, construction areas	2000 - 4000
High-pressure sodium (HPSV) SON	67-121	90	Fair (22)	General lighting in warehouses, factories, street lighting	6000 - 12000
Low-pressure sodium (LPSV) SOX	101-175	150	Poor (10)	Roadways, tunnels, canals, street lighting	6000 - 12000
Metal halide lamps	75-125	100	Good (70)	Industrial bays, spotlighting, floodlighting, retail stores	8000
LED Lamps	30-50	40	Good (70)	Reading lights, desk lamps, night lights, spotlights, security lights, signage lights, etc.	40000 - 100000

7. OTHER POWER CONSUMPTION

7.1 INVENTORY OF IT INFRASTRUCTURE

Sl No.	Location/ Identification	Desktop	Laptop	Printers	Scanners	LCD Projector	Digital Interactive Panel
1	Principal Room	1	1	1	1		
2	IQAC Room	1	1	1	1		
3	Examination Room	1					
4	Library	1		1	1		
5	Computer Lab	23					
6	Fee Counter	3		2			
7	Sociology Class Room						1
8	Hindi Class Room						1



9	English Class Room					1	
10	Multipurpose Hall						1
11	Pol. Sc. Class Room					1	
12	Science Lab					1	
13	Commerce Class Room					1	1
14	Geography Class Room					1	
15	Geography Lab						1
16	Conference Room					1 (LCD)	
	TOTAL	30	2	5	3	6	5

7.2 WATER PUMP DETAILS

Sr. No.	Description	Unit	Pump No.-1	Pump No.-2
1	Rated Power of Motor	KW	0.746	0.746
2	Motor Eff.	%	0.8	0.8
3	Discharge Head	m	10	10
4	Suction Head	m	15	15
5	Pump Type	Submersible/ Monoblock/ Centrifugal Etc.	Submersible	Submersible

7.3 OTHER LOADS

Sl No.	Location/Identification	Air Coolers 300W	60W Exhaust Fan
1	Principal Chamber Toilet Room		1
2	Staff Room Toilet		1
3	Staff Common Room	1	
4	Multi-Purpose Hall	1	
	Total	2	2

ANALYSIS



There should be a regular maintenance schedule of equipment like pumps, exhaust fans, and IT equipment. Electronics such as computers, printers, scanners, etc. more than 3 years or 5 years old (as per their life) should be replaced with new computers/laptops. Ideal temperature should be maintained for all electronic appliances.

8. CAPACITOR BANK

Sl. No.	Identification	Capacity in KVAR
1	Substation I	NA



******* END OF THE REPORT *******