



#### **ENERGY AUDIT REPORT**

Year: 2022-2023

KARANJIA AUTONOMOUS COLLEGE, KARANJIA, MAYURBHANJ



(MAHARAJA SRIRAMCHANDRA BHANJA DEO UNIVERSITY)

#### **Conducted By**

- > Dr. Laxmi Kanta Mishra, Department of Physics
- Dr. Sibadatta Senapati, Department of Chemistry.
- > Sri Souranshu ParidA, SDO, Electrical, Karanjia Electrical Sub-division, TPNODL

#### PREFACE

Energy has been known as a vital and balancing factor in the indices for sustainable development since the Earth Summit in 1992. Especially in the contemporary scenario, it is acknowledged that the heavy and unbalanced energy consumption adversely affects energy price and economic growth, and most countries now give priority to energy conservation methods. The Energy Conservation Act, 2001, defines Energy auditing as the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption. It facilitates a orderly approach to the energy management in a system, trying to balance the total energy input with its use. It identifies all the energy streams in a system and quantifies the use of energy according to its discrete functions. It is a study to determine how and where energy is used, and to identify methods for energy savings. The Energy Auditing for a day is the index of the consumption which normalizes the situation of Energy crisis by providing the schemes for conservation of energy. The energy audit of Karanjia (Auto) College was carried out by an energy committee (Faculties of Physics and Chemistry) on behalf of IQAC, under the supervision of the Energy Audit team. This report is our effort in contributing to the larger picture of effective energy management and conservation. As is known, energy auditing is an on-going process, a part of a larger procedure to ensure longterm sustainable development.

We have enlisted possible solutions based on the outcome of our analysis of data, and our recommendations, which can be executed wholeheartedly in the campus in order to ensure reducing energy waste and maximizing energy potential. We hope in all intense that these will be given its due and that the audit will be fruitful in terms of energy conservation.

## **ENERGY AUDIT TEAM**

- 1. Dr Sibadatta Senapati, Lecturer in Chemistry
- 2. Dr Laxmi Kanta Mishra, Lecturer in Physics
- 3. Sri Souranshu Parid, SDO, Electrical, Karanjia Electrical Sub-division, TPNODL

Supported by all faculties of Science, Arts Commerce department and coordinated by IQAC, Karanjia (Auto) College, Karanjia.

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1. Introduction

Name of the College : Karanjia Autonomous College

Karanjia, Mayurbhanj, pin-757037

Deo

University recognition :Maharaja Sriram Chandra Bhanja
University

Baripada, Mayurbhanj, Odisha

• Campus area :15 acres

• Date of establishment : 1<sup>st</sup> July 1964

• Brief History: Karanjia (Auto) College is a pioneer Institution of higher education, is located about 130 kms to the MSCB University, Baripada on the heart of Mayurbhanj district. This college is established in 1<sup>st</sup> July 1964 with the permission from the Uttkal University of Bhubaneswar, and later affiliated by MSCB University under UGC Act 1956 under section 2(F) and 12(B). The College offering a large number of subjects in Arts and Science and Commerce stream in the Under Graduate level, and has been able to attract students from the entire North Eastern region. This college has been reaccredited with "B" Grade by NAAC in 2016.

#### 2. Energy Auditing

Energy auditing is a routine procedure of observing power consumption of the institute performed on annual basis. According to Energy Conservation Act, 2021, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption". For the fruitful implementation of an energy efficient campus, Karanjia (Auto) College has focused a lot on the improvement and consciousness among the students, teachers, and other members of the

institution on Energy alternatives such as solar energy. As the issue of saving our environment has attained a global prominence in the present time, Karanjia (Auto) College has also taken it extremely essential to work sincerely in the matter of environment consciousness with green energy initiatives. In it strive for a clean, green and energy efficient campus, every possible step is taken by every member or cell of the institution to create a sense of responsibility among the students pertinent to the sustenance of healthy environment in the form of various programmes and project works

## 3. Energy Consumption Data

The electricity supply for Karanjia (Auto) College is provided by Tata Power Northern Odisha Distribution Limited(TPNODL). The energy consumed by Karanjia (Auto) College falls under HT public purpose(Education) Category. The Contracted Demand is 18 KW and the connected load voltage is 11 KV. The energy consumption of the whole campus is facilitated through a Transformer having rating of 63 KVA.

#### 4. Consumer details

Name of the Consumer	Tariff Category	Consumer Account No
Karanjia (Auto) College(Main Supply)	HT (Public purpose, Education	523201340215
	Sector)	
Girls Hostel-1(Gadabari Hostel)	HT(Commercial)	523221161016
GirlsHostel-2(Narmoda Hostal)	HT(Commercial)	523221162159
Ugc Women Hostel	HT(Commercial)	523221163618
Boys Hostel-1	HT(Commercial)	523201340215
Boys Hostel-2	HT(Commercial)	523221010445

The energy efficiency assessment was conducted for the load connected to the mains supply.

Generally the electric energy is used for the following purposes:

- Lighting's load
- Fan
- Air conditioners

- Water pump
- Science lab equipment
- Computers

# 5. Monthly Energy Consumption (2022-2023)

## For Whole College (Except Hostel)

Month	kVAh	PF	kWh	Total Current Bill(Rs)
June-2022	3326	0.99	3227	23,883.
July-August-2022	9619	0.99	9330	59,643
August-2022	4843	0.99	4831	28750
September-2022	4114	0.99	4091	27345
October-November-2022	5123	0.99	5081	30234
December-2022	4045	0.99	4016	23900
January-2023	3513	0.99	3492	20780
February-2023	3744	0.99	3713	22098
March-2023	4945	0.99	4896	28976
April-2023	5070	0.99	5020	29874
May-2023	2674	0.99	2648	15760

#### Girls Hostel-1(NARMADA)

Month	kVAh	PF	kWh	Total Current Bill(Rs)
March-August-2022	8064	0.99	7902	50,000
Sept-2022	1624	0.99	1608	9568
October November -2022	1922	0.99	1903	11327

December-2022	808	0.99	800	4760
January 22				1700
January-23	934	0.99	925	5502
February-2023	0.00			
1 cordary - 2025	870	0.99	862	5126
March-2023	1.000			
2025	1622	0.99	1606	9556
April-2023	1200			
-I momo	1382	0.99	1369	8150
Girls Hostel-2(GADA	DADE			

Month	kVAh	PF	kWh	Total Current Bill(Rs
March-August-2022	3131	0.99	3068	19,416
September-2022	485	0.99	481	2862
October-2022	260	0.99	250	
November-2022			258	1530
	407	0.99	403	2401
December-2022	245	0.99	243	1445
January-2023	378	0.99	375	2230
February-2023	330	0.99	323	1922
March-2023	629	0.99	623	3709
April-2023	947	0.99	940	5597
May-2023	244	0.99	242	1437

Month	kVAh	PF	kWh	Total Current Bill(Rs)
March-August-2022	7843	0.99	7765	46200
September-2022	1195	0.99	1984	11806
October-2022	795	0.99	793	4724
November-2022	1530	0.99	1528	9094

December-2022	4928	0.99	4927	29316
January 2002				27310
January-2023	1134	0.99	1132	6738
February-2023	1000			
2014an y - 2025	1020	0.99	1017	6052
March-2023	1071			
1.141011 2025	1971	0.99	1969	11717
April-2023	2756			
- Piii 2023	2756	0.99	2729	16241
May-2023	660			
111uy - 2023	663	0.99	661	3937

## Boys Hostel-1

	Session	Total Current Bill(Rs)
Boyes Hostel- 2	2022-2023	12,000(approx.)

Month	kVAh	PF	kWh	Total Current Bill(Rs
March-April-2022	2116	0.99	2113	12570
April Mary 2022				12370
April-May-2022	1627	0.99	1626	9676
June-July-2022	1785	0.99	1783	10610
Aug-Sept-2022	655	0.99	652	3882
Sept-Oct-22	1025	0.99	1023	6089
Nov-Dec-2022	799	0.99	797	4738
Jan-2023	625	0.99	622	3696
Feb-2023	860	0.99	857	5097

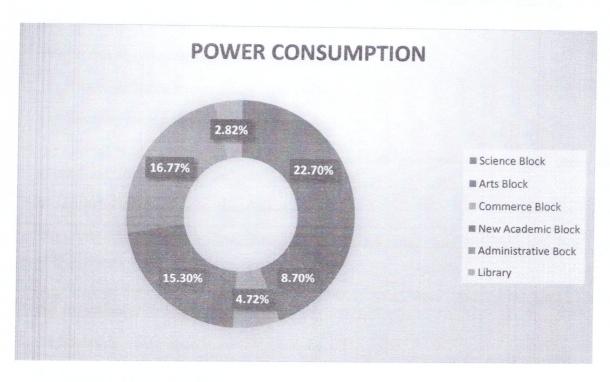
# Equipment wise power consumption of all departments of college (total watt)

Department	Tube	tube	bulb	CFL	FAN	AC	Aqua guard	Lab instrum ent	Computer with printer	Total wattage
Physics	0	360	150	80	1200	0	0	1000	140	2930

0	20								1531
	20	20	0 40	180	0	0	0	0 200	2530
0	18	0 70	) 40	840	0				260
	10			040	0	0	2000	140	3270
0	180	) 10	00   40	420	0	0	300	0	1040
0	168	30 0	0	4800	0	300	0	0	6780
0	40	20	0	120	0	0	100	1200	1480
40	360	0	20	2100	0	0	0	0	2500
0	60	20	0	240	0	0	0	0	
0	180	0		1200				U	320
	180	U	0	1200	0	0	0	0	1380
0	80	60	0	480	1000	0	0	250	1870
0	60	80	0	240	2000		0	280	1980
0	360	0	0	480	0	0	0	140	980
0	60	30	0	300	1000	0	0	320	1710
0	20	30	0	120	1000	0	0	280	1450
0	60	20	0	120	0	0	0		
0	0	0	400	2.60					200
0		0			0	0	0	0	840
0	0	50	20	300	2000	0	0	80	2450
)	740	250	0	1500	0	160	0	0	2650
)	240	220	0	540	0	40	0	0	1040
)	560	500	100	1980		230	0	0	3450
	0	180	0	480	0	0	0	0	660
	420	390	0	1560	0	40	0		2410
0	5680	2390	900	20040					44180
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# Approximate average power Consumption in a month (in%)

Block	Consumption%				
Science Block	22.70				
Arts Block	8.7				
Commerce Block	4.72				
New Academic Block	15.3				
Administrative Bock	16.77				
Library	2.82				
Hostel	23.11				
Others	5.88				



#### 6. Major Findings

Establish energy consumption in the organisation

With the rising awareness on the necessity to save energy, the college has resorted to ways and means for saving electricity. Efforts are made to shift to solar energy phase wise.

- The classrooms and laboratories are in such manner that they allow sufficient light and air during class hours and as a result, much electricity is saved.
- In its drive for saving energy, Karanjia (Auto) College has taken steps to replace all existing bulbs and lights with LED lights phase wise. In fact, all newly constructed buildings have been equipped with LED lights and 5-star rating ceiling fans with a view to reducing the consumption of energy.
- The campus also has a total 14 solar street lights installed in various places. Each of solar streetlights are having power of 20-30 Watt.

#### 8. E-waste management

E-wastes such as damaged computer parts, batteries, electronic items, electrical appliances, empty toner containers, are disposed as scrap and given away to agencies and the NAC, that recycle such products.

#### TPNODL TP NORTHERN ODISHA DISTRIBUTION LIMITED



15/07/2022 19/07/2022 523201340215 35232042274 KA-36767

#### BILL OF SUPPLY FOR ELECTRICITY 523201340215 Consumer Name

Address Details

KARANJIA

PRINCIPAL KARANJIA COLLEGE Rebate Date Due Date Consumer A/c No. Consumer ID Old Consumer No. KARANJIA Bill Number Bill Issue Date

**Tanff Category** 

523013407221305367 12/07/2022 Bill Basis Last Bill Issue Date Bill Month ACTUAL 13/06/2022 2022/06

Supply and Meter Details Power Factor

0.9981

Division	
Sub-Division	
Section DT No.	
Pole No MRU No	
Walking Sequen	
Organization Typ	

Email Id

Mobile No

RED RAIRANGPUR SDO KARANJIA ESO KARANJIA NO-I

9437726436

a Details

: SPECIFIED PUBLIC PURPOSE Category Type HT Contract Demand : 18 KW Supply Voltage : 11 KV Own Transformer : NO **ED** Exemption YES 04/09/2015 Date of Connection 56,154.00 Security Deposit Metering Side LT Consumer Status Active 63 KVA Transformer Rating

Connection Details

Power ON Hour Billable Demand-KVA 720 Meter SI. No. 19.000 Col. Meter No. NEC01284 Bill Period 01/06/2022 - 30/06/2022 Bill Days/Months : 30/1.0000 Load Factor 29 8900 Meter Reading ACTUAL METER Reliability Index : -NA-Voltage Profile :NO

Parameter	Prev Reading	Meter Reading	g Details	REPORT OF THE PARTY.		
KI'M	136 028 00001	Current Reading	M.F	Control of the Contro	Tif Loss	Total
KV4W	136 830 00001	139 250 0000   140 058 0000	1 00	3 222 0000	0.00	3.222 0000
N'D-KVA	18 9100	15 0000	1 00	3.228.0000	0.00	3.228 0000
		10000	100	0.0000	0.00	15 0000

ate: 19/07/2022 diate for Arrears) mount Payable

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23.883.80	DPS(Rs.)		Misc Charges	Prov.	d (Rs.)	Installme	nts(Rs)	Before Rbt. DL(Rs.)	After Rbt. Dt.(Rs.)	
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a. Energy Charges					Bill Detail					
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	22002	5 85	18,883.80	-	1	Debit	1,00			
						Credit			0.00	
					2. Interest	on SDIA	ter TDS)		0.00	
b. Incentive on TOD									0.00	
		-		0.00	3. Total C	urrent Bill	Aft Adi/In	91)		
c. Demand Charge / MMFC		-			4. Rebate	Allowable	(**************************************	31/	23,883.80	
d. Overdrawal penalty		-		4.750.00				nacial .		
e. Penalty for Fall in PF 0%		0.00000			Prompt Payment+Rural+Special  5. Net Current payment after Rebate				-238.84	
Power Factor Incentive		0.00			Digital Payment Rebate				23,644,96	
Colony KvaH charge		0.00			6.Net Current payment after Digital				0.00	
Load Factor Rebate/ Special D		0.00			7. Cross S	wheidy Ch	25000	igitai	23,644.96	
Electricity Charge	iscount	1	0.	00/0.00	8. Dispute	Amount	arges		0.00	
I-b+c+d+e-(+g+h)			2	0.00 / 0.00 8. Disputed Amount 23,633.80 9. Last Rebate Allowed					0.00	
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Liectifetty Duty (8%)				0.00	1100 01	amied			0.00	
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Customer Service Charge										
R.I. Surcharge				0.00	To a stop pay through Paying Phone Per Google Pay Amazon Do 1940DL 123456789101 IF SC Code (11 Godt : IMBACCAUTA PA					
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## SOME PICTURE DURING ENERGY AUDITING PROCESS

























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Coordinator (IQAC

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