

Kakatiya Institute of Technology & Science :: Warangal

(Sponsored by Ekasila Education Society)

Energy Audit Report

of 2022 – 2023

1ST April 2022 To 31ST March 2023








KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE
Opp. Yerragattu Hillock, Hasanparthi - Hanamkonda
WARANGAL- 506015; Ph.No: +91 7382564888, Ext: 268, 264



Preface

Data collection for energy audit of the Kakatiya Institute of Technology & Science, Warangal Campus was conceded by team for the period of 1st April 2022 to 31st March 2023. This audit was over sighted to inquire about convenience to progress the energy competence of the campus. To drop of energy utilization whilst cultivate or humanizing comfort, health and safety were of prime anxiety. This audit required to recognize the mainly energy proficient appliances. Besides, several each day processes concerning common appliances have been provided which facilitate sinking the energy expenditure. The energy audit survey was completed by Department of Electrical & Electronics Engineering, KITS. All data collected from each classroom, laboratory, every room. The work is completed by considering, how many tubes, fans, A.Cs, electronic instruments, motors, etc are in each room. How much was participation of each component in total electricity consumption.

Members of the Committee

1. Head of Department , Electrical & Electronics Engineering - 
2. Dr. C. Venkatesh, Professor, Department of EEE - 
3. Dr. L. Sudheer Reddy, Dean Planning and Execution. 
4. Sri. R. Prasad Raju, Asst. Project Officer. - 
5. Sri. T. Raju, Electreician. 



Energy Audit Report

In this report, college electricity audit has been done considering laboratory instruments, Fans, Lights, air conditioners, Computers, Motors, etc. We have studied total budget of the college, total economic investment of college on the electricity and total generation of electricity from the solar electricity generation units. Also, we have studied total saving of electricity and money from solar generation and requirement of solar energy. Also, the exact contribution of bulbs, fans, computers, instruments, a c's , motors etc in the total requirement of electricity is studied. We studied all these mentioned things by collecting exact data form survey.




PRINCIPAL
Principal
KARATHA INSTITUTE OF TECHNOLOGY & SCIENCE
Opp: Yeragittigutta, V.R. Bheemaram,
Hanamkonda, Warangal-506015, (TS)

Data collection:

The required data is collected by project office and Department of Electrical & Electronics Engineering. According to survey following data is collected for FY 2022 – 2023

S.No	Nameofthebuilding	Energy Efficient Fans	Normal Fans	LED Tube Lights	Normal Tube Lights	CFL Lights	AirConditioners	Fridge/ Geysers	Computer	Printer	Scanner	Xerox Machine	LCD Projector	Motors	Steet Lights	Total Watt
	WattageofEquipment	28	60	20	40	20	1000	1500	30	250	32	1000	300	750	90	
1	Block-I	4	190	49	195	0	32	2	357	9	3	1	7	25		
2	Block- II	14	65	180	29	42	71	2	303	14	11	0	6			
3	Block-III	5	170	55	194	0	22	2	200	7	3	0	5	150		
4	Block-IV	30	465	56	640	50	122	9	423	16	13	5	50	5		
5	Block-V	3	119	14	182	10	72	2	365	10	10	2	12	7		
6	Block-VI	173	0	209	5	8	6	6	42	7	2	0	19	20		
7	Block-VII I2RE	240		50		292	78	5	280	5	2		13	12	5	
8	Canteen	41						5							3	
9	Workshop-II(New)		28	28				1						12		
10	SH-1(DwgHallBlock-6)		12		12			1								
11	SH-2 (L HBlock-7)		4		4											
12	SH-3(LHBlock-8)		12		12											
13	SH-4(HOSTELTVROOM)		10		6	12										
14	IndoorStadium		39	229	8	13	0	2	2	2	2	0	3			
15	Auditorium		20	14	2		4	1					2			
16	BoysHostelShedBlock-1		24	6	24											
17	BoysHostelShedBlock-2		24	6	24											
18	BoysHostelShedBlock-3		24	6	24											
19	BoysHostelShedBlock-4		24	2	24											
20	BoysHostelShedBlock-5		24	3	24											
21	OldDin Hall&Kitchen		12	2	24									3		
22	GirlsHostelBuilding		276	10	277									1.5		
23	BoysHostelBuilding-1		260	11	251			5								
24	BoysHostelBuilding-2		86	6	80	10		2						1.5		
25	StaffQuarters-I		24	6	36	6	6									
26	StaffQuarters-II		24	6	36	6	6									
27	ParkingShedatBlock-I			6												
28	ROWaterPlant&Parking		2	2	4			1						10		
29	Power&GeneratorRoom		6	4	6			1								
30	SecurityRoom		1		6			1								
31	StoresShed		6	2	6											
32	Dispensary		3	2	6											
33	Coffeeday		1	2	4											
34	ProjectOffice&Xerox		4	2	9											
35	Bank/GuestHouseBldng		24	5	36		20	2								
36	STP Plant		3	6	6									25		
37	StreelLight														53	
38	Well&SumpMotors				12									55		
39	WaterSoftners													2		
40	LectureHallShed-1		5		5											
	TotalNumbers	510	1991	985	2219	437	439	50	1972	70	46	8	114	332	61	
	TotalWattage/HOUR	14280	119460	19700	88760	8740	439000	75000	59160	17500	1472	8000	34200	249000	5490	113976
	Total Wattagein aday	71400	597300	98500	443800	43700	2195000	375000	295800	87500	7360	40000	171000	1245000	27450	569881
	Total Wattage /month	149940	1254330	206850	9319800	917700	4609500	7875000	6211800	183750	15456	840000	359100	2614500	576450	119675
	Permonth WattageinKWH	1499.4	12543.3	2068.5	9319.8	917.7	46095	7875	6211.8	1837.5	154.56	840	3591	26145	576.45	119675.

Total power consumption of electrical equipment = 1,19,675 kW / month



Principal
KARNATAKA INSTITUTE OF TECHNOLOGY & SCIENCE
Opp: Yerraguttu, VII Bheemaram,
Hanamkonda, Warangal-506015, (TS)

Power Consumption of Electricity Board

Sr.No.	Month	Consumption Unit(kW)
1	Apr-22	63643
2	May-22	80645
3	June-22	64638
4	July-22	37298
5	Aug-22	41667
6	Sept-22	63972
7	Oct-22	49768
8	Nov-22	48634
9	Dec-22	46033
10	Jan-23	44855
11	Feb-23	49167
12	Mar-23	59007
Total Power Consumption in Yearly		6,49,327 kW
Average Power Consumption in Monthly		54,111 kW



Karatha
PRINCIPAL
Principal
KARATHA INSTITUTE OF TECHNOLOGY & SCIENCE
Opp: Yemagittugutta, Vill: Bhemaram,
Hinamkonda, Warangal-506015. (TS)

Total requirement of electricity, generation of electricity using renewable energy sources :-

Power requirement met by renewable energy sources	Total power requirement	Renewable energy source	Renewable energy generated and used
39,485 units /Month	54,111 units/Month	Solar Power	45,321 / 39,485 units /Month

Alternate Energy Initiaves:

Percentage of power requirement of the institute met by the renewable energy sources

Formula =

$$\frac{\text{Power requirement met by renewable energy sources}}{\text{Total power requirement}} \times 100 = 40.31 \% (9\text{yrs})$$

Financial Year	Total Units from TSNPDCL	Units generated from Solar Plant	Total Units	Units exported to TSNPDCL	Units used from SCPP by KITSW	Total Units Consumed by KITSW	% of Power requirement met by renewable sources
2014-15	499692	130442	630134	0	130442	629031	20.74
2015-16	505601	301998	807599	30105	271893	777494	34.97
2016-17	451250	369932	821182	110891	267509	718759	37.22
2017-18	446262	593942	1040204	207842	386100	832362	46.39
2018-19	556128	531729	1087857	128674	403055	959183	42.02
2019-20	576690	530464	1107154	106412	424052	1000742	42.37
2020-21	197692	504627	702319	336869	167758	365450	45.90
2021-22	365806	545270	911076	201788	343482	709288	48.43
2022-23	649327	543853	1193180	70028	473825	1123152	42.19
Total	4248448	4052257	8300705	1192609	2868116	7115461	40.31



Principal
 KARATHA INSTITUTE OF TECHNOLOGY & SCIENCE
 Opp: Yerraguttu, Vill: Bheemaram,
 Hanamkonda, Warangal-506015, (TS)

Photographs of Renewable Energy Sources-



Fig- Roof Top Solar Energy Generation system

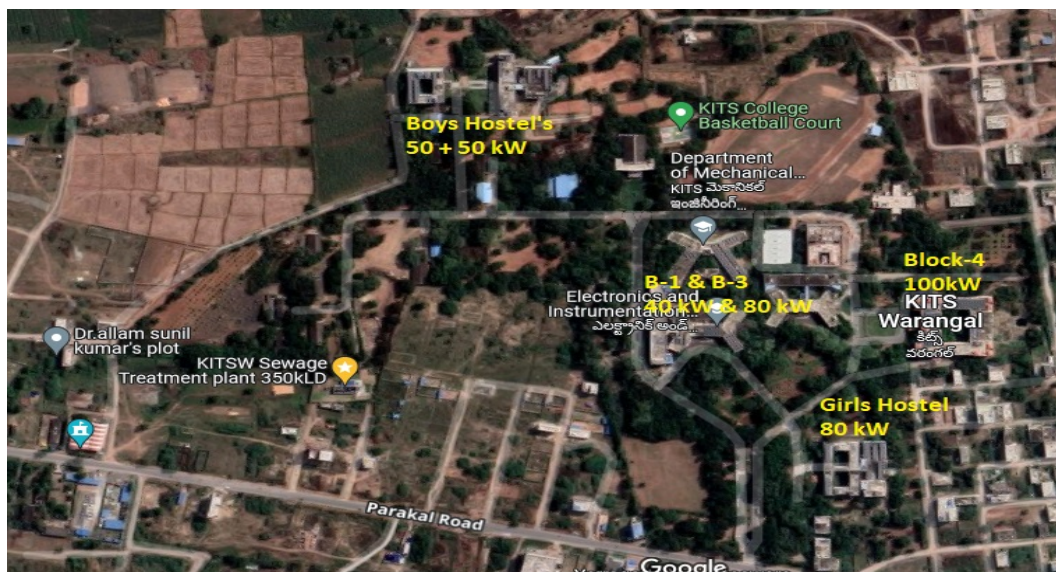


Fig. Birds Eye View of 400 kW Roof Top Solar Generation

The Solar energy generation devices contain a solar panels and generation device generates about 1,490 units per day.



Principal
PRINCIPAL
Principal
KARATTA INSTITUTE OF TECHNOLOGY & SCIENCE
Opp: Yemagattugutta, Vill: Bheemaram,
Hanamkonda, Warangal-506015. (TS)

Conclusion:

In conclusion, data generated in energy audit are useful for understanding the energy distribution and its utilization in college.. The college needs maximum **1,19,675 KW** of electricity. In other words college needs **54,111 Units/month** and Solar energy generation device generate the only **39,485 units/month**.

Recommendation:

- 1) Replace all CFL Tube light using LED Bulb, to save morepower.
- 2) Replace CRT monitor using LED or LCD monitor.
- 3) Replace old fans with new fans
- 4) Replace old Re-Wound motors with new one.

Results and discussion:

As far as the energy audit is concerned, its main concern is regarding educational institution. We have collected data by considering the tube light, fan, computer, printer, A.C, motors and instruments.. The total required energy is **1,19,675 KW** .Energy Consumption through all device is **39,485 Unit /Month** and Renewable source Generate **45,321 Unit /Month**.



[Signature]
Principal
KARNATAKA INSTITUTE OF TECHNOLOGY & SCIENCE
Opp: Yerraguttu, V.18 Bheemaram,
Hanamkonda, Warangal-506015, (TS)