

Energy Audit Report

**M.V.P.Samaj's
K.P.G Arts, Commerce and Science College, Igatpuri**

Submitted

to

Principal,

K.P.G Arts, Commerce and Science College, Igatpuri

By

Dr. N.U.Patil

Head Department of Physics,

K.P.G Arts, Commerce and Science College, Igatpuri

Preface

Data collection for energy audit of the K.P.G Arts, Commerce and Science College, Igatpuri Campus was conceded by team for the period of 1 Sept 2017 to 30 Aug 2018. 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 Dept. Of Physics. All data collected from each classroom, laboratory, every room. The work is completed by considering, how much tubes, fan, A.Cs, electronic instruments, etc in each room. How much was participation of each component in total electricity consumption.

Acknowledgement

Head Department of Physics K.P.G Arts, Commerce and Science College,
Igatpuri is very much thankful to Principal S. S. Kale, IQAC coordinator NAAC
for motivating us for energy audit

Energy Audit Report of K.P.G Arts, Commerce and Science College, Igatpuri

Introduction:

A nation is tiring to advance in quantity and quality to the spread of education among the common India and development of their intelligence. In India the entire field of education and other fields of intelligent activities had been monopolized by a handful of men before independence. But today we are marching towards the desirable status of a developed nation with fast strides. But the development should be a sustained one. For achieving such an interminable development energy management is essential . As far as concerning electricity crisis, we are facing lack of electricity during office work. So, institutional management is taking design regarding production of electricity and saving electricity for eco-social aspect.

Energy requirement of India is growing and incomplete domestic fossil fuel treasury. The country has motivated strategy to enlarge its renewable energy resources and policy to establish the nuclear power plants. India increases the involvement of nuclear power to largely electrical energy development facility from 4.2% to 9%. India's industrial demand accounted for 35% of electrical power requirement, domestic household use accounted for 28%, agriculture 21%, commercial 9%, and public lighting and other miscellaneous applications accounted for the rest. Energy conservation means reduction in energy consumption without making any sacrifice of

quantity or quality. A successful energy management program begins with energy conservation; it will lead to adequate rating of equipment's, using high efficiency equipment and change of habits which causes enormous wastages of energy . By observing all these study lack of electricity and huge electricity demands. It is necessary to plan to being self-sufficient in electricity requirement.

In the present study, college electricity audit has been done. In this study considered practical laboratory, instrument, Fans, air conditioners, Computers etc are considered in this study. We have studied total budget of the college, total economic investment of college on the electricity and total generation electricity from the solar wind hybrid electricity generation unit. Also, we have studied total saving of electricity and money from solar wind generation and requirement of solar energy. Also, it is studied that exact contribution of bulb, fans, computer, instruments etc in the total requirement of electricity. We studied all these mentioned thinks by collecting exactly data form survey.

Experimental and data collection:

All required data is collected by Department of Physics. In building, in every room, how much fans, tubes, fans, computer, instrument AC, etc will these is measured. According to survey following data is collected.

Total Power Requirement of various Equipment

Department\Instr .	Fan	LED Tubelight	CFL Tubeligh t	A.C.	Fridg -e	Comp- uter	Print er	Scan- ner	Xerox Machine	Proje- ctor	Borewell Motor
Principal Office	2	5		2	1	1	1	1		1	
Physics Lab.	0	8				1	1			1	
Zoology Lab.		9									
Botany Lab.		6								1	
Chemistry Lab.		0	10								
Office	5	0	5			7	5				3
Computer Lab.	2		4	2		22	1			1	
Exam.Dept.	3		6			1			2		
Staff Room	2		3								
Library	2		5				1	1	1		
Classroom	18		14								
YCMOU/NAAC		2									
Sport			2								
HOD Office	6		5			9					
Power House			3								
Pantry	1		1								
Seminar Hall	2	5	2							1	
Passage		7	18								
Washroom		2									
Total Quantity	43	44	78	4	1	41	9	2	3	5	3
Total Power Consume in '1' hours(Watt)	55	22	40	1424	2000	346	230	30	3000	340	5968
Total Power Consume in '5' hours(Watt)	11825	4840	15600	5696	2000	14186	2070	60	9000	1700	17904
consumption in month(Watt)	271975	111320	358800	131008	46000	326278	47610	1380	207000	39100	411792
Total Power Requirement of All Instrument=1952.263 KW in Month											

Power Consumption of Electricity Board

Sr.No.	Month	Consumption Unit(KW)
1	Sep-17	1345
2	Oct-17	997
3	Nov-17	859
4	Dec-17	1206
5	Jan-18	1626
6	Feb-18	1230
7	Mar-18	1230
8	Apr-18	5241
9	May-18	2169
10	Jun-18	1335
11	Jul-18	1130
12	Aug-18	790
Total Power Consumption in Yearly		19158KW
Average Power Consumption in Monthly		1596.5KW

Graphically Representation of Electricity Distribution :-

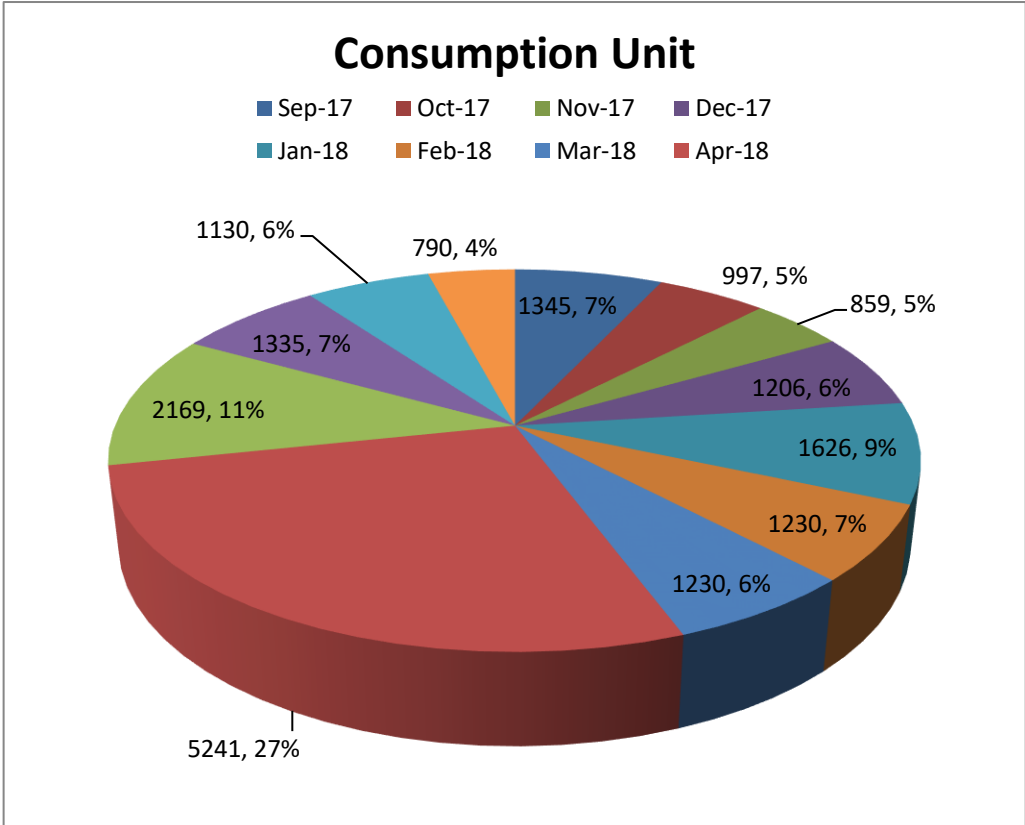


Fig. Contribution of tube light, fan, computer, printer, AC and instrument in total use of energy by Graphical Representation

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
1952.263 units /Month	480 units/Month	Hybrid Solar and Wind	480 units /Month

Photograph of Renewable Energy Sources-



Fig- Solar Energy Generation system



Fig. Photograph of wind miles energy generation device

The hybrid energy generation devices contain a solar panel and wind turbine. The hybrid energy generation device generates 15 units per day. The college is now using 15 kW UPS and batteries for energy storage

Conclusion:

In conclusion, data generated in energy audit are useful for to understand the energy distribution and utilization of college. The college needs maximum 1952.263KW of electricity. In other words college needs 1596.5Units/month and hybrid energy generation device generate the only 480 units/moths.

Recommendation:

- 1) Replace all CFL Tube light using LED Bulb, to save more power.
- 2) Replace CRT monitor using LED or LCD monitor.
- 3) Separate connection of office, Computer Lab. and classroom.

Results and discussion:

As far concerning the energy audit, electricity audit is main concern regarding educational institution. We have collected data by considering the tube light, fan, computer, printer, A.C and instruments. The total required energy is **1952.263KW** .Energy Consumption through all device is **1596.5 Unit /Month** and Hybrid Renewable source Generate **480Unit /Month**.

