

ESTD :1960



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**સર પી. ટી. સાયન્સ કૉલેજ, મોડાસા**

હેમચંદ્રાચાર્ય ઉત્તર ગુજરાત યુનિવર્સિટી, પાટણ સંલગ્ન

The M.L.Gandhi Higher Education Society, Modasa Managed

**Sir P. T. Science College, Modasa**

Affiliated to Hemchandracharya North Gujarat University, Patan

Accredited by B++ by NAAC & A Grade by KCG, GOG

પો.બો.નં.૦૧, કોલેજ કેમ્પસ, મોડાસા-૩૮૩ ૩૧૫,  
જિ.અરવલ્લી (ગુજરાત)

P.B. No. 01, College Campus, MODASA-383 315,  
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College Code No. : 32 / HNGU Code : 008  
AISHE Code : C-6635

Grant Code No. : 127  
Zone Code No. : 93

Ref. No.

Date : / /20

This is Certified to that Energy Audit Carried out by Students of the Institute  
Which is Certified by University External Examiner

Date :30-04-2024



  
Principal  
Sir P. T. Science College  
Modasa-383315, Dist. Arvaili.

# SIR P.T.SCIENCE COLLEGE, MODASA

(Managed by THE M. L. GANDHI HIGHER EDUCATION SOCIETY)

[UGC 2F, 128 RECOGNISED]- [NAAC- ACREDITED B<sup>++</sup>, AAA GOG ACREDITED A]

## CERTIFICATE

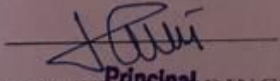
This is to certify that the project work entitled **ENERGY AUDIT** is carried out by students mentioned below, in partial fulfillment for the award of degree of master of science in physics during the academic year APRIL 2022. The project has been approved as it satisfies the academic requirements in respect of project work prescribed for the Master of Science.

SR NO.	NAME	UNIVERSITY EXAM NO.
1	RAJPAL DHAVALRAJ VIJAYKUMAR	219
2	PRANAMI GAURAVKUMAR DINESHBHAI	221
3	CHAUDHARY HANSRAJ NAVNEETBHAI	222
4	PATEL PRIYABEN DINESHBHAI	226
5	CHAUDHARY RUTURAJ PANKAJBHAI	228
6	KAPADIYA VAIBHAVKUMAR RATNABHAI	233

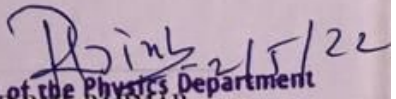
PLACE: MODASA

SIGNATURE OF GUIDE

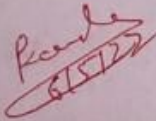
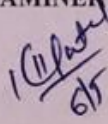
PROF. G. L. VEKARIA

  
Principal  
SIGNATURE OF PRINCIPAL  
Sir P. T. Science College  
Modasa-383315, Dist. Arvall.

SIGNATURE OF H.O.D.

  
head of the Physics Department  
D.K.R. H. PARMAR  
Sir P. T. Science College, Modasa

SIGNATURE OF EXAMINER

**PROJECT REPORT**

**Energy Audit**

**A Report  
Submitted To**

**PHYSICS DEPARTMENT**

**OF**

**SIR.P.T. SCIENCE COLLEGE  
MODASA**

Affiliated To

Hemchandracharya North Gujarat University, Patan Accredited By –  
NAAC – " B++", Grade and (AAA) By 'A'

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## **Preface**

Data collection for energy audit of the Sir P.T. Science College, Modasa 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 Sir P.T Science College, Modasa is very much thankful to Principal K.P.Patel, IQAC coordinator NAAC for motivating us for energy audit..

# **Energy Audit Report of the Sir P.T. Science college, Modasa**

## **Introduction:**

A nation is trying 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:**

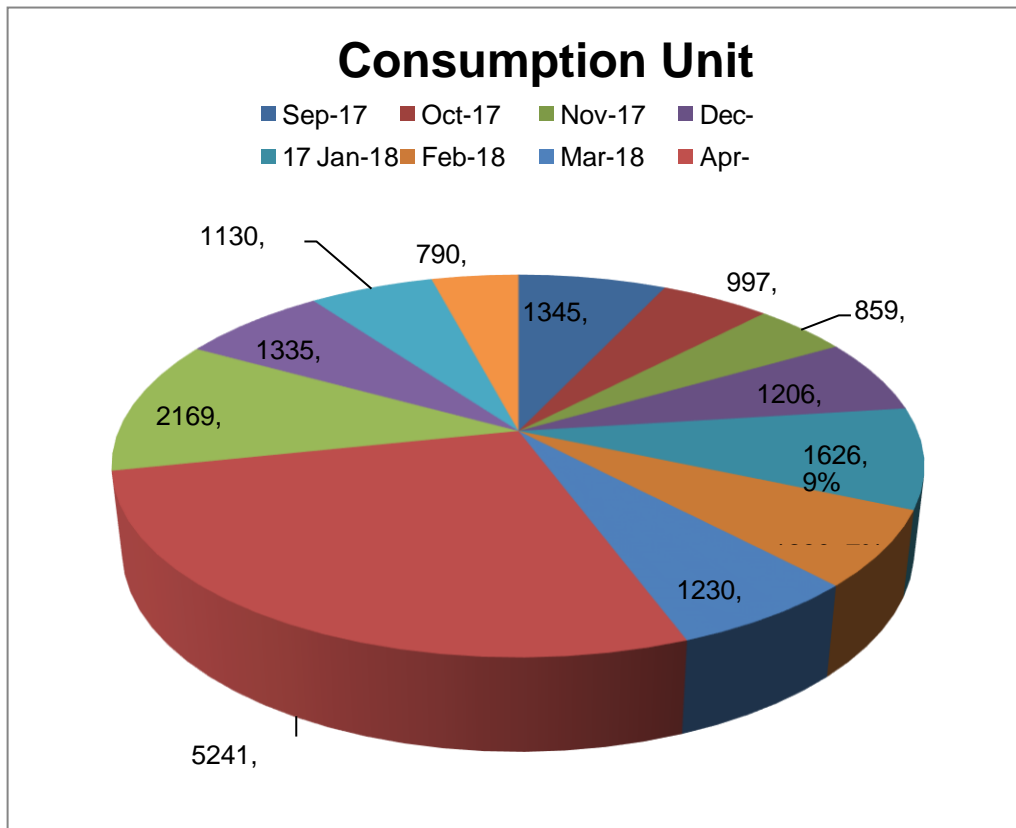
All required data is collected by Department of Physics. In building, in every room, how much fans, tubes, fans, computer, instrument AC, etc will these is measured. According to survey following data is collected.



## Power Consumption of Electricity Board

<b>Serial no</b>	<b>Month</b>	<b>Consumption Unit(KW)</b>
1	Jan-19	980
2	Feb-19	1320
3	Mar-19	1120
4	Apri-19	1130
5	May-19	1427
6	June-19	1527
7	July-19	804
8	Aug-19	904
9	Spt-19	950
10	Oct-19	1200
11	Nov-19	721
12	Dec-19	1195
<b>Total Power Consumption in Yearly</b>		<b>13478KW</b>
<b>Average Power Consumption in Monthly</b>		<b>1123.17KW</b>

## Graphically Representation of Electricity Distribution :-



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

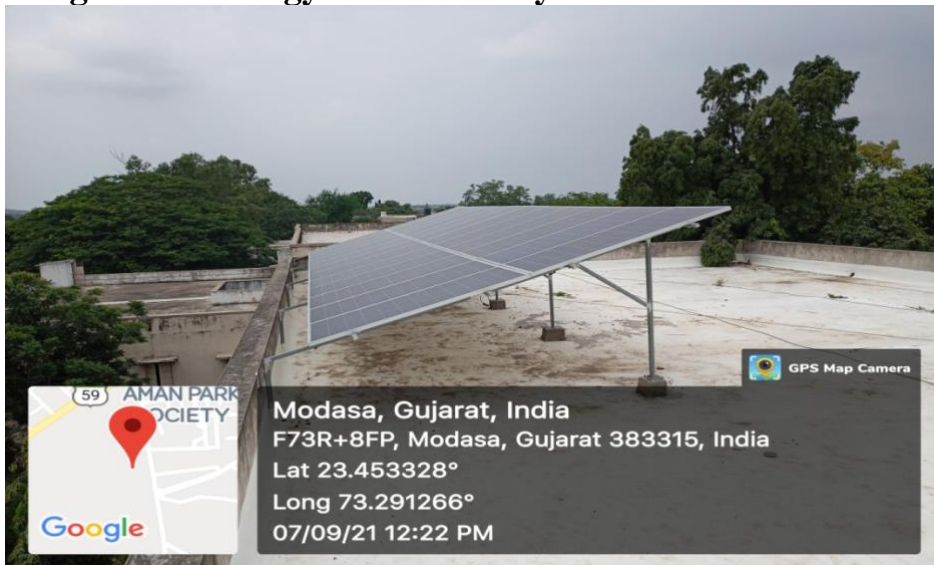
**Total requirement of electricity, generation of  
Electricity using renewable energy sources.-**

<b>Power requirement met by renewable energy sources</b>	<b>Total power requirement</b>	<b>Renewable energy source</b>	<b>Renewable energy generated and used</b>
15507.564 kW /Month ( 5 hrs/day)	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. The hybrid energy generation device generates 15 units per day. The college is now using 15 kW UPS and batteries for energy storage

## GEDA ( Gujarat energy development agency ) : Exhibition

More than 15,000 students visited in three day exhibition in 2017.



## 2021 – Two thousands students visited in one day exhibition



Save Energy ( Dr, Anil Patel sir ) : He gave information about solar energy and its importance for future generation, as well as he informed us about government scheme like solar rooftop scheme, energy light bill prepaid smart meter project.

## **Conclusion:**

In conclusion, data generated in energy audit are useful for to understand the energy distribution and utilization of college. The college needs maximum 1123.17 KW/Month of electricity. In other words college needs 13478 kW/Year 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( Expected ) :**

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 : **15507.564**. Energy Consumption through all device is **1123.17 kw /Month** and Hybrid Renewable source Generate **480 Unit /Month**.

