

Energy Audit Report

Academic year 2020-2021



**Matsyodari Arts, Science and Commerce College, Ambad, Dist.
Jalna (Maharashtra)-431204**

Department of Electrical Engineering
Mitsyodari Engineering College, Jalna



Principal

Principal
Mitsyodari Engineering College, Jalna
Dr. S. K. Biradar
Principal
MSCET, Jalna

Head, Dept. of Electrical Engineering
Prof. K.C.O. Reddy
Head, Elec. Engg. Dept.
MSCET, Jalna

**Department of Electrical Engineering,
Matsyodari Engineering college, Jalna**



Certificate

This is to certify that, the **Energy Audit** of MSS's Arts, Science and commerce college, Ambad, Dist. Jalna has been conducted by Department of Electrical Engineering, MSS's Engineering college, Jalna For the period from 01st November 2020 to 31th October. 2021.


Head

Dept. of Electrical

Engineering
Prof. K.C.O. Reddy
Head, Elect. Engg. Dept.
MSSCET, Jalna

Principal


MSS's Engineering College, Jalna

Dr. S. K. Biradar
Principal
MSSCET, Jalna

3. ENERGY

11) List ten ways that you use energy in your College.

Electricity, LPG, Firewood, Solar Panel, others

Table. The various sources are utilized for using energy effectively in the college following the details.

Sr. No.	Energy	Reduction of usage	Sources
1	Electricity	52%	Traditional
2	Solar Energy	42%	Non traditional
3	Generator	5%	Traditional
4	LPG	1%	Traditional

12) Are there energy saving methods employed in your College?

If yes, please specify.

Yes

LED Lamps are installed in the college

(There is a provision to increase the count of LED Lights).

13) How much money does your College spend on energy such as electricity, gas, firewood, etc. in a month? Record it.

Table. Monthly Record for year 2019

Month	Consumption (Units)	LPG / Hearth, Furnace	Fuel for Generator
January-19	1549	Rs. 28,800 Per Year	Rs. 3,000 Per Year
February-19	6613		
March-19	5698		
April-19	4289		
May-19	4335		
June-19	3868		
July-19	3801		
August-19	3848		
Sept-19	10233		
Oct-19	6417		
Nov-19	4650		
Dec-19	5688		

Table. Monthly Record for year 2020

Month	Consumption (Units)	LPG / Hearth, Furnace	Fuel for Generator
Jan-20	4733	Rs. 7,000	Rs. 15,00
Feb-20	2931		
March-20	3323		

- 14) a) How many CFL bulbs has your College installed? If none, why not?
 b) How many LED bulb/tubes has your college installed
 c) Instead of CFL/LED bulbs electronic tube are installed in the college

Sr. No.	Type of Lamp	Numbers
a)	CFL Lamp	20
b)	LED Tube	75
c)	Electronic Tube	375

- 15) Are any alternative energy sources employed / installed in your College? (Non-Conventional Energy Resources, energy efficient stoves, etc.) If Yes, then Specify.

Yes

Photovoltaic Solar Panels are installed in college campus of 30 KW capacity. Also D.G. set of 20 KVA is installed.

- 16) Do you run "switch off" drills at College?

Yes

- 17) Are your computers and other equipment put on power saving mode?

Yes

- 18) Does your machinery (AC, Computer, weighing balance, Printers, etc.) run on standby modes most of the time? If yes, how many hours?

Yes

For Two hours daily

IV – WATER CONSERVATION

19) **List four uses of water in your College**

- 1) Drinking
- 2) Toilets
- 3) Gardening
- 4) Laboratory sinks

20) **How does your College store water? Are there any water saving techniques followed in your College? What are they?**

Yes

College campus has big water tank with cover and overhead Syntax water tank with cover.

21) **If there is water wastage, specify why.
How can the wastage be prevented / stopped?**

NO

It is prevented by using leak proof taps, water seal at the place of leakage, etc.

22) **Locate the point of entry of water and point of exit of waste water in you College.**

Entry - Bore well
Exit - Sewage Tank

*** Where does your water come from? (Source)**

Water comes from Bore well and Harvested water

*** Where does the waste water go?**

Waste water from RO (Water filter unit) is used in toilets

23) **Write down four ways that could reduce the amount of water used in your Institute.**

- 1) Taps with push cock system.
- 2) Avoiding the evaporation of water.
- 3) Provided glass for drinking purpose.
- 4) Awareness among the students to save the water.

24) **Approximate utilization of water for 4 weeks. At the end of the period, compile a table to show how many Litres of water have been used.**

Week	Water for toilet (Ltr)	Water for drinking (Ltr)	Water for gardening (Ltr)	Water for laboratory (Ltr)	Water for lavatory (Ltr)
1	5000	3000	7000	1000	8000
2	5000	3000	7000	1000	8000
3	5000	3000	7000	1000	8000
4	5000	3000	7000	1000	8000

25) Does your Institution harvest rain water?

Yes

If yes, how many rain water harvesting units are there?

Five units (Buildings)

Use of Rain Water:

The institute has rainwater harvesting system to collect the rain water. The huge volume of water from the roof of the institute is collected in the reservoir available in the college campus. This water is partially used for gardening and the remaining water is used for improving the ground water level. The college emphasizes on the significance of water conservation and explains to all the students the importance of preserving and saving it. Students are encouraged to use water wisely and only when necessary. They also act immediately upon witnessing any wastage and take necessary action to stop it.

5. ANIMAL WELFARE

26) List the animals (wild and domestic) found on the campus

(dogs, cats, squirrels, birds, insects, etc.)

Sr. No.	Animal/ Bird	Numbers (Range)
1	Dogs	15 to 18
2	Parrot	20 to 25
3	Cats	03 to 05
4	Sparrow	80 to 100
5	Squirrels	55 to 65
6	Pigeon	90 to 100
7	Fishes in pond	500 to 700

27) How many dogs in your area have undergone Animal Birth Control anti Rabies (ABC – AR)?

How many needs ABC – AR?

NIL

28) Which is the animal welfare organization nearest to your college?

Animal Dispensary, Jalna.

NIL

Does it have an ambulance service? No

29) Is there any incidence of animals getting wounded / affected due to unfavourable conditions existing in your College or nearby (like a dog getting wounded, poisoning of animals, improper caging of animals, hunting of animals, etc.)

NO

What did you / your College / neighbour do?

- Institute installed feeders and bird houses in the college campus.
- College staff manages the feeders and also ensured that there is no scarcity of water for birds and animals during summer season.

6. GENERAL

30) Are you aware of any environment Laws pertaining to different aspects of environmental management?

Yes

31) Does your college have any rules to protect the environment?

Yes

possible rules you could include.

- Save Water Save Life
- Plant more trees and protect them
- Help to Conserve Energy
- Turn Lights and Fan **OFF** when not in use
- Save Birds
- Animal should not be injured or killed

Action Plan

- Try to manage the waste by incorporating the policies like Reduce, Reuse and Recycle/ Dispose
- Set progressive targets to achieve aims of continuous improvement and zero waste
- Upgrade rain water harvesting system
- Upgrade use of Non-conventional Energy system in the campus up to next level.
- Target to plant and protect 2000 Trees in the campus.
- Try to install more bird feeders and water pots in the college campus.

Conclusions

- It is to note that, the college performs fairly well on sustainability issues. The college does consider the environmental impacts of most of its actions and takes required efforts to act in an environmentally responsible manner. In conversations with faculty, staff, and administration of the college, major improvements were made over the last one year.
 - The main recommendations are:
 - Improve the monitoring and reporting of water and energy usage of the institute.
 - To continue working towards composting/ Vermi-Composting as the more tree leaves waste generated.

ANNEXURE-1 Energy Audit

Name of the College: MSS's Ankushrao Tope College, Jalna.

Any other/Notes:

Sr. No.	Equipment	Total No.	In Use		Working hours	
			Day Time	Night Time	Day Time	Night Time
1	Light	460	400	60	08	10
2	Fan	160	130	30	08	10
3	PC	120	120	00	08	00
4	AC	02	02	00	08	00
5	Power Point	100	08	10	08	00
6	Plug Point	300	08	20	08	00

Load factor of Light load & equipment is 0.25 only. Diversity factor 1.17

ANNEXURE-2
Water Audit
Sample Questioner

Following questions were asked during auditing

Sr.No.	Questions	Outcome
1	How many times & how much water you drink?	6 Times/2 Litres
2	How many times you wash your hands & mouth?	3 Times
3	How many times you use washroom?	3 Times
4	How many taps are there in the College?	110
5	How much water is supplied daily?	05 Thousand Litres
6	What is capacity of the tank?	20,000 Litres
7	How much water is required in canteen for drinking?	5,000 Litres
8	How much water is required for washing the utensils in canteen?	1,000 Litres
9	How many basins are there in laboratory?	06

Observations:

Name of College: MSS's Art's, Science & Commerce College Ambad Dist. Jalna.

Month & year: March 2021

Water use profile:

Sr. No.	Description	Figures
1	Total no. of water users	1125
2	Number of employees	125
3	Number of Students	1814
4	Number of guests per day	50
5	Number of working days in month	24
6	Office Timing	10:00 am To 05:15 pm
7	Area of rooftops/terrace	16000 Square Meters
8	Area of unpaved surface	-
9	Area of paved surface	-
10	Rainwater harvesting system availability	Yes
11	Is rainwater harvesting system working	Yes
12	Daily water supply (Litres)	8000 lit

Calculation- Formula

Total daily use = Rate of discharge X average duration of use = average quantity per use # quantity per use X no. of Users = total use

No. of uses = number of time used X numbers of students user

Sr. No.	Site	Measurement of water (Daily)					
		Total no. of sources	Rate of discharge (lit/min)	Average duration per use (min)	Average quantity per use (Litre)	No. of users (no.)	Total daily use (litre)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Bathroom	35	3	15	50	125	1800
2	Toilet (W.C.)	60	3	10	30	600	6000
3	Laboratory	60	5	30	80	250	8000
4	Kitchen	01	01	10	05	125	1200
5	Garden	05	10	250	500	02	5000
6	Shower	-	-	-	-	-	-
7	Drinking	05	02	3	500	1200	8000
8	Laboratory	04	03	02	50	20	400

Water storage-

Sr. No.	Capacity	Number	No. of Time it is topped daily	Average time of water overflowing	Flow rate o water inlet/overflow
Overhead 1	50,000	12	01	00	10
Total	50,000	12	01	00	10

Sr. No.	Site	Total No. of leakages	Measurement of the water use		
			Rate of discharge (Litre/min)	Daily loss (Litre)	Total loss (Litre)
1	Bathroom	NIL			
2	Toilet				
3	Laboratory				
4	Kitchen				
5	Garden				
6	Shower				

ANNEXURE-3
Solid Waste Audit
Questionnaire on Solid waste

Name of College: MSS's Art's, Science & Commerce College Ambad Dist. Jalna.
Month and Year: March 2021

Sr. No.	Description	No.
1	Total no. of users	1125
2	Numbers of employee	125
3	Numbers of Visitors per day	50
4	1. Events (Workshop, Conference, Competitions etc.) No. of Visitor and duration of event: 2. Job Fair 3. Exhibitions	As per participants of various events

1. Form for maintaining records of solid waste handled (roughly in kg/month)
Month and Year: January 2016

Sr. No.	Description	Wing A	Sports Complex	B Wing	Hostel 1	Hostel 2	Meditation Center	Library
1	Paper waste (kg./month)	50 KG						
2	Plastic waste (kg./month) Hard plastic Soft plastic Carry bags Others (Papers tea cups)	Nil						2.5 KG
3	Biodegradable waste	Tree leaves cutting. Lawn Grass cutting-5kg						
4	Construction waste	It is used for refilling low lying area						
5	Grass waste	-						
6	Others	-						

2. Form for maintaining records of disposal of solid waste

Sr. No.	Specification	Yes	No	NA
1	Are the solid waste generated at the facility segregated and stored in designated accumulation area?	√		
2	Are street sweeping burned stored on pavement?		√	
3	Are solid waste properly stored/ containerized for offsite disposal? (Trash stored in a covered dumpster)?	√		
4	Is there evidence of improper disposal in the trash dumpster (batteries, lumps, waste oil, etc.)?		√	
5	Are solid waste accumulation areas are labelled	√		
6	Do the accumulation areas have clearly marked boundaries?	√		
7	Are empty drums returned to the district stockroom or vendor			√
8	Are empty compressed gas cylinder labelled "EMPTY"?			√
9	Does the facility call the distributor to pick up the transport cylinders?			√


3. Form for maintaining records of dispersal of solid waste recovery

Sr. No.	Specification (Y/N)	Segregated (Y/N)	Recycled (Y/N)	Reuse (Y/N)	Other (specify)
1	Paper	Yes	-	Yes	Sold
2	Cardboard	-	-	-	NA
3	Scrap wood	Yes	-	-	Use for Furnace
4	Wood pellets	-	-	-	NA
5	Scrap metals	-	-	-	NA
6	Plastic scrap	Yes	-	-	Sold
7	Glass	Yes	-	-	Sold
8	Laboratory	-	-	-	NA
9	Fluorescent lamps	-	-	-	NA
10	Air filters	-	-	-	NA
11	Waste oil	-	-	-	NA
12	Waste oil filters	-	-	-	NA
13	Empty drums	-	-	-	NA
14	Used tires	Yes	-	-	Sold

Summary of Energy Bill for Last Months


Sr. No.	Month & Year	Electricity Bill (in Rs.)	Fuel Bill (in Rs.)	Total (in Rs.)
1	Nov-20	7,050	200	7,050
2	Dec-20	8,101	300	8,101
3	Jan-21	11,173	300	11,173
4	Feb-21	10,173	200	10,173
5	Mar-21	13,173	200	13,173
6	Apr-21	7,926	200	7,926
7	May-21	8,926	1000	8,926
8	Jun-21	6,926	300	6,926
9	Jul-21	8,750	300	8,750
	Total	82,198	3000	82,198

Sr. No.	Month & Year	Electricity Bill (in Rs.)	Fuel Bill (in Rs.)	Total (in Rs.)
1	Aug--21	10,175	500	10,175
2	Sept-21	11,120	600	11,120
3	Oct-21	15,450	700	15,450
	Total	36,745	1800	36,745

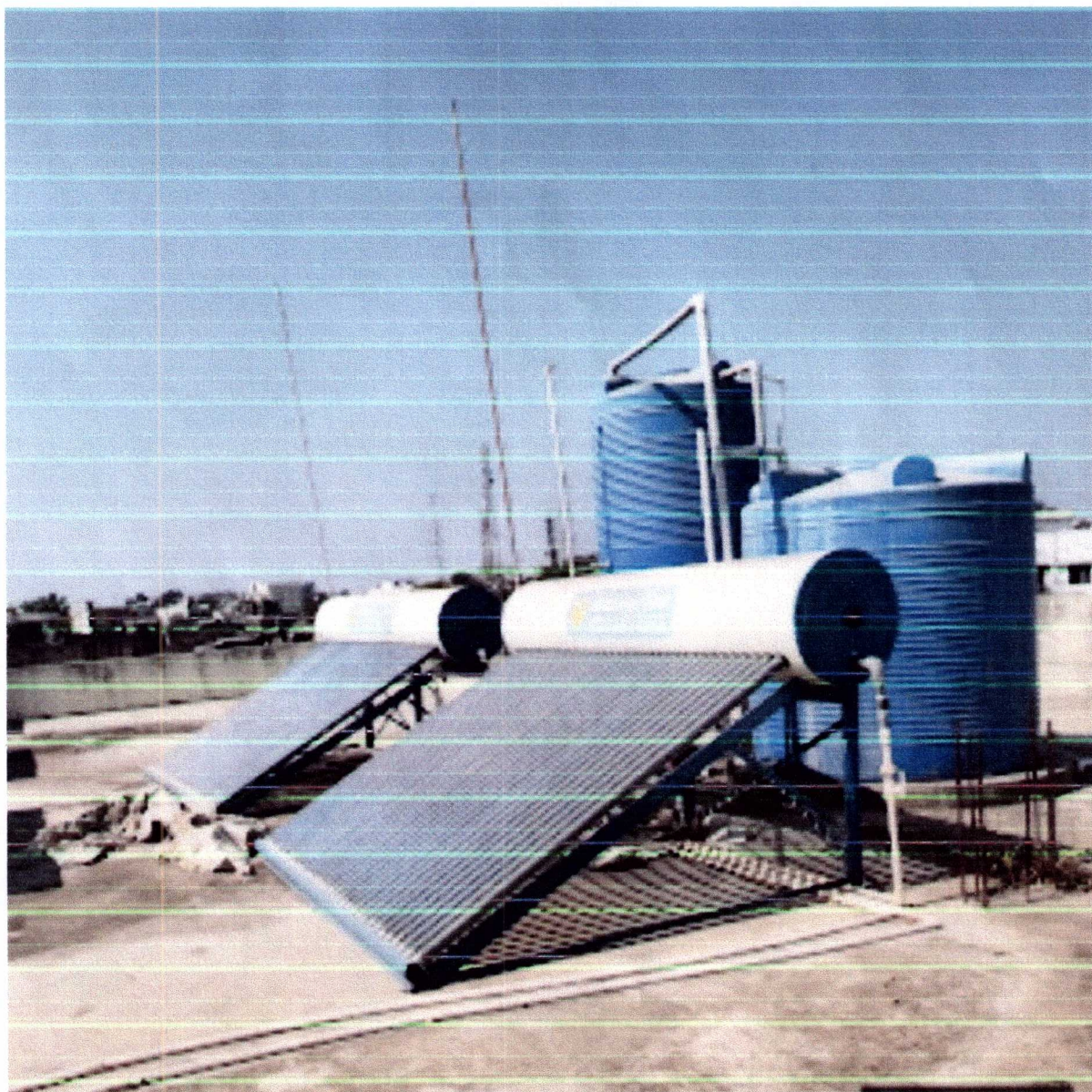

Co-ordinator




Principal


Dept. Of Electrical Engineering
MSS's Engineering College,
Jalna
Prof. K.C.O. Reddy
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MSSCET, Jalna

Photographs





GPS Map Camera

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