ENERGY AUDIT REPORT

FAROOK TRAINING COLLEGE

KOZHIKODE

Executed by

OTTOTRACTIONS
Energy-Engineering-Environment

2023

OTTOTRACTIONS
Energy - Engineering - Environment

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Empanelled Accredited Energy Auditor: EmAEA-33
Bureau of Energy Efficiency,
Government of India.

Empanelled Energy Auditor: EMCEEA-0211F,
EMC (Energy Management Centre-Kerala)

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Energy Audit Report

Farook Training College, Kozhikode

Report No: EA 1094
2023

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Empaneled Accredited Energy Auditor, AEA 33
Bureau of Energy Efficiency
Government of India

Empaneled Energy Auditor, EMCEEA-0211F,
Energy Management Centre
Government of Kerala.

Authorized Energy Auditor, GEDA/ENC/EAC: Autho/2014/8/103/2316,
Gujarat Energy Development Agency
Government of Gujarat

Empaneled Energy Auditor, India SME Technology Services Ltd
A joint Venture of SIDBI, SBI, Indian Bank, Oriental Bank of Commerce
& Indian Overseas Bank

About OTTOTRACTIONS

OTTOTRACTIONS established in 2005, is an organization with proven track record and knowledge in the field of energy, engineering, and environmental services. They are the first Accredited Energy Auditor from Kerala for conducting Mandatory Energy Audits in Designated Consumers as per Energy Conservation Act-2001. Government of Kerala recognized and appreciated OTTOTRACTIONS by presenting its prestigious “The Kerala State Energy Conservation Award” for the best performance as an Energy Auditor. Ottotractions is an ISO 9001-2015, ISO 17020-2012 and ISO 14001-2015 Certified organization, which ensures the quality of its services.

Acknowledgment

We were privileged to work together with the administration and staff of Farook Training College, Kozhikode. We are grateful to them for the timely help extended to complete the audit and bringing out this report.

With gratitude, we acknowledge the diligent effort and commitments of all those who have helped to bring out this report.

We also take this opportunity to thank the bona-fide efforts of audit team for unstinted support in carrying out this audit.

We thank our consultants, engineers and backup staff for their dedication to bring this report.

Thank you.

For OTTOTRACTIONS

B V Suresh Babu
Accredited Energy Auditor
AEA 33, Bureau of Energy Efficiency
Government of India

Contents

Certification

This is to certify that

The data collection has been carried out diligently and truthfully;

All data monitoring devices are in good working condition and have been calibrated or certified by approved agencies authorised and no tampering of such devices has occurred;

All reasonable professional skill, care and diligence had been taken in preparing the energy audit report and the contents thereof are a true representation of the facts;

Adequate training provided to personnel involved in daily operations after implementation of recommendations; and

The energy audit has been carried out in accordance with the Bureau of Energy Efficiency (Manner and Intervals of Time for the Conduct of Energy Audit) Regulations, 2010.

SURESH BABU B V
ACCREDITED ENERGY AUDITOR (AEA 33)
BUREAU OF ENERGY EFFICIENCY
GOVERNMENT OF INDIA

Executive Summary					
Consolidated Cost Benefit Analysis of Energy Efficiency Improvement Projects					
Farook Training College, Kozhikode					
Sl No	Projects	Investment	Cost saving	SPB	Energy saved
		(Lakhs Rs)	(Rs)/Yr	Months	kWh/Yr
1	Energy Saving in Lighting by replacing existing 2 No's T8 (40W) Lamps to 18W LED Tube	0.01	0.004	18.63	42
2	Energy Saving in Lighting by replacing existing 15 No's T12 (55W) Lamps to 18W LED Tube	0.05	0.04	14.83	398
3	Energy Saving in Lighting by replacing existing 4 No's CFL (15W) Lamps to 9W LED Bulb	0.004	0.002	20.39	17
4	Energy Saving by replacing existing 131 No's in-efficient ceiling fans with Energy Efficient Five-star fans	3.93	0.23	209.10	2465
5	Installation of 10kWp Solar Power Plant	5.50	1.820	36.26	13688
	Total	**9.48**	**2.09**	**59.84**	**16610**
(The saving are projected as per the assumed operation time observed based in the discussions with the plant officials. The data of saving percentages are taken from BEE guide books and field measurements.)					

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Introduction

A detailed energy audit has been carried out at Farook Training College by OTTOTRACTIONS in February 2023. During the energy audit energy saving opportunities has been identified to help improving energy efficiency of the facility. OTTOTRACTIONS is an Accredited Energy Auditor of Bureau of Energy Efficiency and Empaneled Energy Auditor of Energy Management Centre, Government of Kerala.

This energy audit report complies with the clauses in *Energy Conservation Act, 2001* on mandatory energy audit (**Form 4** [refer regulation 6(2)] guidelines for preparation of energy audit report) and complies with the G.O (Rt) No.2/2011/PD dated 01.01.2011 issued by Government of Kerala on mandatory energy audit.

1.1. General Building details and descriptions

Farook Training College, established in 1961 by Rauzathul Uloom Association, is the first teacher training college managed by Muslim Minority in the state to promote the cause of education in Malabar, to provide quality teacher education to all classes of people, to attract and encourage talented students towards teaching profession, especially from among financially and educationally backward Muslim minority students and the other marginalized sections of the society. The College was initially affiliated to the University of Kerala and later it was affiliated to University of Calicut in 1968

All the courses offered are recognized by National Council for teacher Education. The College has excellent infrastructure and premium faculty. The college is to make distinctive and eloquent contribution to the course of teacher education and to promote research in various branches of teacher education. The college seeks to nature the quest for excellence by assuring and providing opportunities that are equitable and accessible to students from backgrounds of any disadvantage and there by build their capacities through commitment to the profession and values of high stature.

Occupancy Details					
Particulars	2018-19	2019-20	2020-21	2021-22	2022-23
Total Students	276	288	316	328	324
Staffs	37	37	37	37	37
Total Occupancy of the college	313	325	353	365	361

For calculating specific energy consumption, the total built-up area is considered.

Energy audit team

The Energy Audit team is listed below. Besides this list various domine experts also participated in this project.

1. Suresh Babu B V, Accredited Energy Auditor, AEA 33
2. B. Zachariah, Chief Technical Consultant
3. Abin Baby, Project Engineer
4. Jomon J S, Project Engineer
5. Vishnu S S, Project Engineer
6. Reshma, Data Analyst
7. Anjana B S, Project Assistant

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Process description

The energy audit has been carried out at Farook Training College, Kozhikode. The following is the baseline data of this building.

BASELINE DATA SHEET FOR GREEN AUDIT												
1	Name of the Organisation	Farook Training College, Kozhikode										
2	Address (include telephone, fax & e-mail)	Farook Training College Paruthipara Rd, Farook College, 673632 farooktc06@gmail.com 0495 2440662										
3	Year of Establishment	1961										
4	Name of building and Total No. of Electrical Connections/building	FTC College (1)										
5	Total Number of Students	Boys	-	Girls	-	Total	324					
6	Total Number of Staff	37										
7	Total Occupancy	361										
8	Total area of green cover	60%										
9	Type of Electrical Connection	HT	0	LT	1							
10	Total Connected Load (kW)	24										
11	Average Maximum Demand (KVA)	-										
12	Total built up area of the building (M^2)	4383.02										
13	Number of Buildings	2										
14	Average system Power Factor	0.99										
15	Details of capacitors connected	Nil										
16	Transformer Details (Nos., kVA, Voltage ratio)	TR 1										
		0										
17	DG Set Details (kVA)	DG1	DG2	DG3	DG4	DG5	Remarks					
		15	15									
18	Details of motors	Rating		Nos.		Remarks						
		5 to 10		3								
		10 to 50										
		Above 50										

3

Energy and utility system description

3.1.1 Electricity

Electricity is purchased from KSEB under a LT Connections, the details are given below. Two 15 kVA Diesel Generators are in operation at this campus

Electricity Connection Details		
Farook Training College, Kozhikode		
1	Name of the Consumer	Farook Training College, Kozhikode
2	Tariff	LT-6A/Ndom
3	Consumer Numbers	1166336002400
4	Connected Load Total (kW)	24
5	Annual Electricity Consumption (kWh)	17811

3.2. Thermal Energy / Transportation

No bus is operated from college for transportation. LPG is used for cooking in the canteen and diesel is used to operate Diesel Generators.

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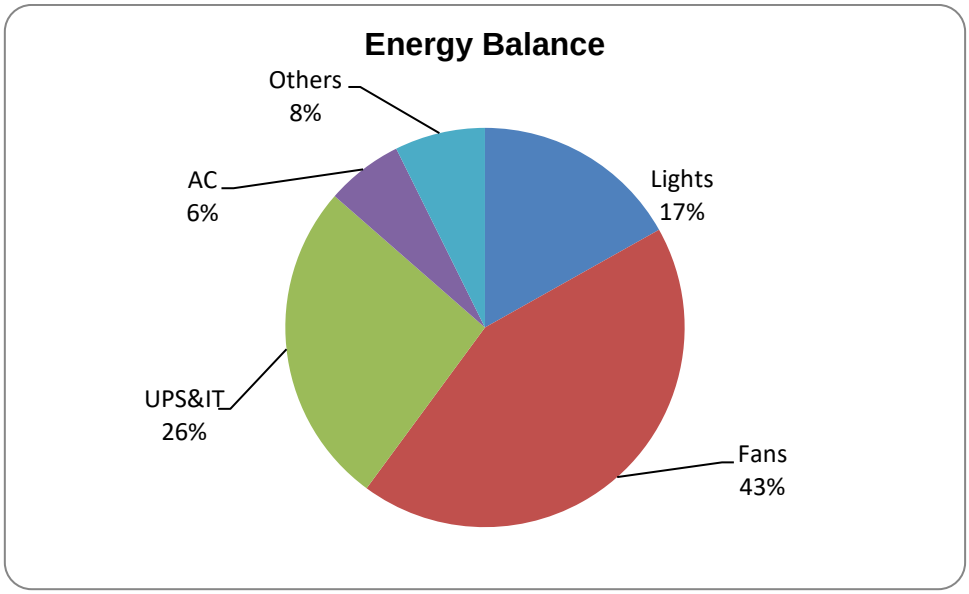
Energy Balance



Fans account for 43% of the overall energy consumption in this facility, while lighting utilizes 17%, UPS and IT contribute 26%, and other miscellaneous uses constitute 8%. Additionally, 6% of the total energy is consumed by air conditioning systems.

5

Performance evaluation of major utilities and process equipment's /systems.

5.1. List of equipment and process where performance testing was done.

5.1.1. Electrical System

5.1.2. Lighting & Fans

5.2. Results of performance testing

5.2.1. Electrical System

The average unit cost of electricity is **9.15 Rs/kWh**. This is taken as the basis for the financial analysis of electrical energy efficiency projects. The information on average energy consumption is taken from the historical electricity bill analysis.

Electricity Consumption

Electricity Bill Details (2022-23)						
Name of the Consumer			Farook Training College, Kozhikode			
Connected Load (kW)			24	Consumer no	1166336002400	
Tariff		LT-6A/Ndom		Section	Ramanattukara	
Month	kWh	Fixed charge (Rs)	Energy charge (Rs)	Duty (Rs)	Meter rent (Rs)	Total amount to be paid (Rs)
Apr	1957	1920	12995	1300	17.7	16377
May	1312	1920	8714	871	17.7	11620
Jun	1729	1920	11483	1148	17.7	14697
Jul	1815	1920	12049	1205	17.7	15325
Aug	1374	1920	9121	912	17.7	12072
Sep	1260	1920	8368	837	17.7	11236
Oct	1356	1920	9001	900	17.7	11939
Nov	1161	1920	7706	771	17.7	10500
Dec	1230	1920	8167	817	17.7	11012
Jan	1532	1920	10172	1017	17.7	13240
Feb	1449	1920	9620	962	17.7	12627
Mar	1636	1920	10865	1087	17.7	14010

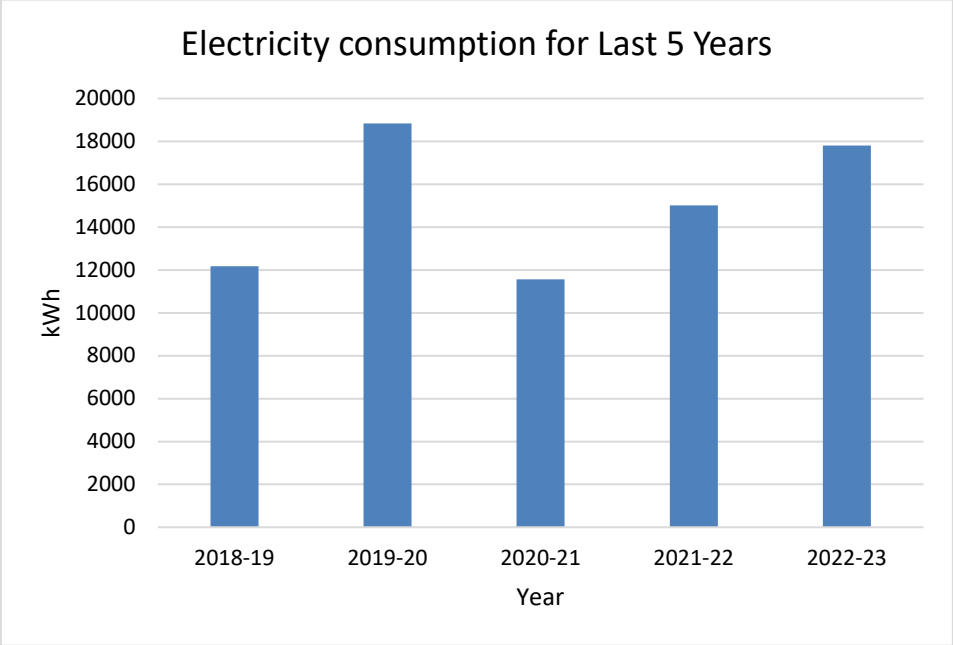
Electricity Bill Details (2021-22)						
Name of the Consumer			Farook Training College, Kozhikode			
Connected Load (kW)			24	Consumer no	1166336002400	
Tariff		LT-6A/Ndom		Section	Ramanattukara	
Month	kWh	Fixed charge (Rs)	Energy charge (Rs)	Duty (Rs)	Meter rent (Rs)	Total amount to be paid (Rs)
Apr	957	1920	6356	636	17.7	9000
May	847	1920	5625	563	17.7	8188
Jun	686	1920	4556	456	17.7	7000
Jul	493	1920	3271	327	17.7	5572
Aug	1912	1920	12695	1269	17.7	16043
Sep	1010	1920	6707	671	17.7	9390
Oct	1277	1920	8480	848	17.7	11360
Nov	1371	1920	9105	910	17.7	12054
Dec	1450	1920	9630	963	17.7	12638
Jan	1770	1920	11756	1176	17.7	15000
Feb	1642	1920	10901	1090	17.7	14050
Mar	1605	1920	10658	1066	17.7	13780

Electricity Bill Details (2020-21)						
Name of the Consumer		Farook Training College, Kozhikode				
Connected Load (kW)		24		Consumer no	1166336002400	
Tariff		LT-6A/Ndom		Section	Ramanattukara	
Month	kWh	Fixed charge (Rs)	Energy charge (Rs)	Duty (Rs)	Meter rent (Rs)	Total amount to be paid (Rs)
Apr	957	1920	6356	636	17.7	9000
May	948	1920	6296	630	17.7	8933
Jun	596	1920	3960	396	17.7	6338
Jul	1328	1920	8815	881	17.7	11732
Aug	1075	1920	7139	714	17.7	9870
Sep	987	1920	6551	655	17.7	9217
Oct	854	1920	5672	567	17.7	8240
Nov	663	1920	4403	440	17.7	6830
Dec	892	1920	5926	593	17.7	8522
Jan	842	1920	5594	559	17.7	8153
Feb	1358	1920	9016	902	17.7	11955
Mar	1068	1920	7090	709	17.7	9816

Electricity Bill Details (2019-20)						
Name of the Consumer		Farook Training College, Kozhikode				
Connected Load (kW)		24		Consumer no	1166336002400	
Tariff		LT-6A/Ndom		Section	Ramanattukara	
Month	kWh	Fixed charge (Rs)	Energy charge (Rs)	Duty (Rs)	Meter rent (Rs)	Total amount to be paid (Rs)
Apr	969	1920	6433	643	17.7	9085
May	1093	1920	7256	726	17.7	10000
Jun	3118	1920	20702	2070	17.7	24940
Jul	1489	1920	9889	989	17.7	12925
Aug	1569	1920	10415	1042	17.7	13510
Sep	1635	1920	10856	1086	17.7	14000
Oct	1303	1920	8651	865	17.7	11550
Nov	1438	1920	9546	955	17.7	12544
Dec	957	1920	6356	636	17.7	9000
Jan	2093	1920	13900	1390	17.7	17382
Feb	1703	1920	11306	1131	17.7	14500
Mar	1468	1920	9749	975	17.7	12770

Electricity Bill Details (2018-19)						
Name of the Consumer		Farook Training College, Kozhikode				
Connected Load (kW)		24		Consumer no	1166336002400	
Tariff		LT-6A/Ndom		Section	Ramanattukara	
Month	kWh	Fixed charge (Rs)	Energy charge (Rs)	Duty (Rs)	Meter rent (Rs)	Total amount to be paid (Rs)
Apr	598	1920	3971	397	17.7	6350
May	598	1920	3971	397	17.7	6350
Jun	407	1920	2702	270	17.7	4940
Jul	996	1920	6613	661	17.7	9286
Aug	-114	1920	-754	-75	17.7	1100
Sep	975	1920	6473	647	17.7	9130
Oct	1310	1920	8695	870	17.7	11599
Nov	1558	1920	10343	1034	17.7	13430
Dec	1406	1920	9339	934	17.7	12314
Jan	1519	1920	10084	1008	17.7	13142
Feb	1608	1920	10679	1068	17.7	13803
Mar	1318	1920	8754	875	17.7	11664

Annual Electricity Consumption (kWh)						
Consumer No	2018-19	2019-20	2020-21	2021-22	2022-23	Connected Load (kW)
1166336002400	12179	18834	11569	15021	17811	24
TOTAL	12179	18834	11569	15021	17811	24



Diesel

The campus has two 15 kVA Diesel Generator. The details of Diesel consumption are given below.

Diesel Consumption Details				
	Transportation	Generator	Total	cost
	in L	in L	in L	in Rs
18-19	0	83.01	83	7944
19-20	0	84.71	85	8106
20-21	0	86.44	86	8272
21-22	0	88.20	88	8441
22-23	0	90.00	90	8613

Petrol

Petrol Consumption Details				
	Transportation	Generator	Total	cost
	in L	in L	in L	in Rs
18-19	646	0.00	646	61789
19-20	659	0.00	659	63050
20-21	672	0.00	672	64337
21-22	686	0.00	686	65650
22-23	700	0.00	700	66990

Base Line Energy Data						
Farook Training College, Kozhikode						
		2018-19	2019-20	2020-21	2021-22	2022-23
1	Electricity KSEB (kWh)	12179	18834	11569	15021	17811
2	Electricity DG (kWh)	270	270	270	270	270
3	Electricity Solar, Off grid (kWh)	0	0	0	0	0
4	Electricity (KSEB + DG + Off grid) kWh	12449	19104	11839	15291	18081
5	Electricity Grid Tied (kWh)	0	0	0	0	0
6	Diesel (L)	83.01	84.71	86.44	88.20	90.0
7	LPG (kg)	150.00	150.00	90.00	165.00	180.00
8	Biogas generated/year (kg)	0.00	0.00	0.00	0.00	0.00

Energy Consumption Profile						
Sl No	Fuel	2018-19	2019-20	2020-21	2021-22	2022-23
		kCal				
1	Electricity	10706332	16429502	10181550	13150377	15549310
2	Diesel	871638	889426	907578	926100	945000
3	LPG	1800000	1800000	1080000	1980000	2160000
4	Biogas	0	0	0	0	0
Total		13377970	19118929	12169128	16056477	18654310

Lighting

Sl.No	Location	Lights							
		LED-T	LED-B(9)	LED-B	LED(18W)	LED(30W)	T8	T12	CFL
1	UGC Remedial Coaching Centre							1	
2	DECCE	2							
3	Physical Science Lab	2							
4	MEd Class 2		1			1			
5	Corridor		1		4	1			
6	Physiology Lab	2							
7	Research Scholars	2						2	
8	MEd Class 1	4							
9	Conference Hall				26				
10	Library	5	3			4			
11	Lunch room	2							
12	IQAC				5				
13	Exam Room							1	
14	Multipurpose Hall	2							
15	Principal				12				
16	Visitors Lounge				5				
17	Staff room	1			16				
18	Office	1			12		1	1	
19	Auditorium Block	7		4					
20	Rest Room×2							2	
21	Science Classroom		3						1
22	Corridor	1	7		3				1
23	Malayalam Classroom							2	
24	Social Science	1							1
25	English Class I		1					2	
26	Social Science 1	1						2	
27	Physical Science							1	
28	Malayalam I		3						
29	English Class 2	1					1		

30	Maths I	1	1					1	
31	Natural Science I		1						1
32	Physical Classroom		3						
33	Canteen	1							
34	Maths 2		1						
35	Computer Lab	6							
	Total	**42**	**25**	**4**	**83**	**6**	**2**	**15**	**4**

Lux Measurement

Sl. No	Location	Avg
1	UGC Remedial Coaching Centre	112
2	DECCE	123
3	Physical Science Lab	80
4	MEd Class 2	80
5	Physiology Lab	153
6	Research Scholars	159
7	MEd Class 1	164
8	Conference Hall	88
9	Library	123
10	Lunch room	97
11	IQAC	123
12	Exam Room	125
13	Multipurpose Hall	133
14	Principal	111
15	Visitors Lounge	126
16	Staff room	125
17	Office	123
18	Auditorium Block	125
19	Science Classroom	164
20	Malayalam Classroom	88
21	Social Science	123
22	English Class I	97
23	Social Science 1	123
24	Physical Science	125
25	Malayalam I	133
26	English Class 2	111
27	Maths I	126
28	Natural Science I	125
29	Physical Classroom	123
30	Canteen	123
31	Maths 2	125
32	Computer Lab	127

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Energy efficiency in utility and process system

The specific energy consumption is normally taken as the ratio of total energy consumed to the total are of building.

OTTOTRACTIONS- ENERGY AUDIT						
Farook Training College, Kozhikode						
Energy Performance Index (EPI)						
Sl No	Particulars	2018-19	2019-20	2020-21	2021-22	2022-23
1	Total building area (m^2)	4383.02	4383.02	4383.02	4383.02	4383.02
2	Annual Energy Consumption (kCal)	13377970	19118929	12169128	16056477	18654310
3	Annual Energy Consumption (kWh)	15556	22231	14150	18670	21691
4	Total Energy in Toe	1.34	1.91	1.22	1.61	1.87
5	Specific Energy Consumption kWh/m^2	3.55	5.07	3.23	4.26	4.95

The Energy Performance Index (EPI) is

4.95 kWh/m^2

The EPI of 2022-23 may be taken as benchmark.

7

Evaluation of energy management system

Energy management policy

There is no written energy policy available, but environment policy is available which includes energy conservation also. A draft energy management policy is given below. The management may constitute an energy management policy and display the same in the plant to motivate the staff.

FAROOK TRAINING COLLEGE, KOZHIKODE

ENERGY POLICY

(Draft)

We are committed to optimally utilize various forms of energy in a cost effective manner to effect conservation of energy resources. We are committed to conserve the energy which is a scarce resource with the requisite consistency in the efficiency, effectiveness in the cost involved in the operations and ensuring that production quality and quantity, environment, safety, health of people are maintained. We are also committed to increase the renewable energy share of the total energy we use.

We are also committed to monitor continuously the saving achieved and reduce its specific energy consumption by minimum of 2% every year.

Date ----------

Head of the Institution

7.1. Energy management monitoring system

- **Energy Management Cell** has to be constituted with an objective to revise action plan for energy conservation thereby reducing the production cost.
- Energy conservation tips/ posters are displayed in crucial points.
- Use of renewable energy has to be encouraged.

7.2. Training to staff responsible for operational and Documentation.

- The staff and students need to be made more aware of the importance of energy saving and management.
- Log books shall be maintained to record Electricity Consumption and Diesel consumption.
- Meter reading shall be taken and compared with KSEB regularly.
- Better operating practices regarding appliances and fixtures should be taught to the staff.

7.3. Best Practices

- Have solid Waste management program
- Conducted Green Audit.
- Have different social and environmental clubs
- Installed LED bulbs
- Installed Solar Street Lights in the campus
- Conducted Energy Conservation Training Programs

8

Energy Conservation Measures and Recommendations

Executive Summary					
Consolidated Cost Benefit Analysis of Energy Efficiency Improvement Projects					
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1	Energy Saving in Lighting by replacing existing 2 No's T8 (40W) Lamps to 18W LED Tube	0.01	0.004	18.63	42
2	Energy Saving in Lighting by replacing existing 15 No's T12 (55W) Lamps to 18W LED Tube	0.05	0.04	14.83	398
3	Energy Saving in Lighting by replacing existing 4 No's CFL(15W) Lamps to 9W LED Bulb	0.004	0.002	20.39	17
4	Energy Saving by replacing existing 131 No's in-efficient ceiling fans with Energy Efficient Five star fans	3.93	0.23	209.10	2465
5	Installation of 10kWp Solar Power Plant	5.50	1.820	36.26	13688
	Total	**9.48**	**2.09**	**59.84**	**16610**
(The saving are projected as per the assumed operation time observed based in the discussions with the plant officials. The data of saving percentages are taken from BEE guide books and field measurements.)					

OTTOTRACTIONS- ENERGY AUDIT	
Energy Saving Proposal	
Energy Saving in Lighting by replacing existing 2 No's T8 (40W) Lamps to 18W LED Tube	
Existing Scenario	
2 numbers of T8(40 W) lamps were identified during the energy audit field survey in the facility. During discussion with officers it is observed that the average utility of these fittings are of 30%.	
Proposed System	
The existing T8 may be replaced to LED Tube of 18W in phased manner and the savings will be of 55% (inclusive of improved light output and reduced energy consumption)	
Financial Analysis	
Annual working hours (hr)	2400
No of fittings	2
Total load (kW)	0.08
Annual Energy Consumption (kWh)	77
Expected Annual Energy saving for replacing all fittings (kWh)	42
Cost of Power	9.15
Annual saving in Lakhs Rs (1st year)	0.00
Investment required for complete replacements [@Rs 300 per fittings](Lakhs Rs)	0.01
Simple Pay Back (in Months)	18.63

OTTOTRACTIONS- ENERGY AUDIT	
Energy Saving Proposal	
Energy Saving in Lighting by replacing existing 15 No's T12 (55W) Lamps to 18W LED Tube	
Existing Scenario	
15 numbers of T12(55 W) lamps were identified during the energy audit field survey in the facility. During discussion with officers it is observed that the average utility of these fittings are of 30%.	
Proposed System	
The existing T12 may be replaced to LED Tube of 18W in phased manner and the savings will be of 67% (inclusive of improved light output and reduced energy consumption)	
Financial Analysis	
Annual working hours (hr)	2400
No of fittings	15
Total load (kW)	0.83
Annual Energy Consumption (kWh)	594
Expected Annual Energy saving for replacing all fittings (kWh)	398
Cost of Power	9.15
Annual saving in Lakhs Rs (1st year)	0.04
Investment required for complete replacements [@Rs 300 per fittings](Lakhs Rs)	0.05
Simple Pay Back (in Months)	14.83

OTTOTRACTIONS- ENERGY AUDIT	
Energy Saving Proposal	
Energy Saving by replacing existing 131 No's in-efficent ceiling fans with Energy Efficient Five star fans	
Existing Scenario	
There are 131 numbers of ceiling fans installed in the facilty with minimum 8 hrs a day operation. All are conventional type and most of them are very old.	
Proposed System	
There is an energy saving opportunity in replace the existing fans with new five star labelled fans.The five star labelled fans give a savings up to 30% with higher service value (air delivery/watt).	
Financial Analysis	
Annual working hours (hrs)	2400
Total numbers of ordinary fans	131
Total load (kW)	9.17
Annual Energy Consumption (kWh)	8803
Expected Annual Energy saving, for total replacement(kWh)	2465
Cost of Power (Rs)	9.15
Annual saving in Lakhs Rs (1st year)	0.23
Investment required for a total replacement (Lakhs Rs)[@3000 Rs per Fan with 50W at full speed]	3.93
Simple Pay Back (in Months)	209.10

OTTOTRACTIONS- ENERGY AUDIT	
Energy Saving Proposal 5	
Energy Saving in Lighting by replacing existing 4 No's CFL(15W) Lamps to 9W LED Bulb	
Existing Scenario	
24 numbers of CFL (15W) lamps were identified during the energy audit field survey in the facility. During discussion with officers it is observed that the average utility of these fittings are of 30%.	
Proposed System	
The existing CFL may be replaced to LED Bulb of 9W in phased manner and the savings will be of 40% (inclusive of improved light output and reduced energy consumption)	
Financial Analysis	
Annual working hours (hr)	2400
No of fittings	4
Total load (kW)	0.06
Annual Energy Consumption (kWh)	43
Expected Annual Energy saving for replacing all fittings (kWh)	17
Cost of Power	12.26
Annual saving in Lakhs Rs (1st year)	0.002
Investment required for complete replacements [@Rs 90 per fittings](Lakhs Rs)	0.004
Simple Pay Back (in Months)	20.39

Energy Saving Proposal	
Installation of 10kWp Solar Power Plant	
Existing Scenario	
There is a good potential of solar power electricity generation. The availability of sunlight is very high. There are some canopies available in the proposed site, but by having proper trimming of trees this may be avoided. If the SPVs are place in the roof top it will help improving RTTV (Roof Thermal Transmit Value) of the building.	
Proposed System	
It is proposed to have a Solar Power Plant of 10kW at the beginning stage. The state and central government is pushing and giving good assistance to the installation. It can be installed as an internal grid connected system which is much cheaper than off grid system. Now days the technology provides trouble free grid interactive and connected system. The installation will provide 25yrs trouble free generation with only 20% efficiency loss at the 25th year.	
Financial Analysis	
Proposed Solar installed Capacity (kW)	10
Total average kWh per day expected (3.5kWh/day average)	37.50
Total annual Generating Capacity (kWh)	13688
Cost of energy generated annually Lakhs Rs	1.82
Investment required (INR lakh)(Approx)	5.50
Simple Pay Back (in Months)	36.26
Life cycle in Yrs	25
Total Saving in Life Cycle (Approx) RS lakh	45.51

Technical Supplements

Farook Training College, Kozhikode																							
Sl.No	Location	Lights								Fans					IT				AC	Others			
		LED-T	LED-B(9)	LED-B	LED(18W)	LED(30W)	T8	T12	CFL	CF	BLDC	WF	EF	PF	Printer	Photostat	Projector	PC	1 TR	PA	TV	Fridge	Induction Cooker
1	UGC Remedial Coaching Centre							1		1								1					
2	DECCE	2								3													
3	Physical Science Lab	2								3													
4	MEd Class 2		1			1				4								1			1		
5	Corridor		1		4	1				1													
6	Physiology Lab	2								2													
7	Research Scholars	2						2		5													
8	MEd Class 1	4								4													
9	Conference Hall				26							10			1				4	1	1		
10	Library	5	3			4				16					1			9					
11	Lunch room	2								2													
12	IQAC				5					3					1								
13	Exam Room							1		1													
14	Multipurpose Hall	2								7													
15	Principal				12					2	1							1	1				

16	Visitors Lounge				5					1													
17	Staff room	1			16					18					2							1	
18	Office	1			12		1	1		9					6	3		5					1
19	Auditorium Block	7		4						8		8					1			1			
20	Rest Room×2							2		4													
21	Science Classroom		3						1	3		1									1		
22	Corridor	1	7		3				1														
23	Malayalam Classroom							2		2							1						
24	Social Science	1							1	2							1	1					
25	English Class I		1					2		3													
26	Social Science 1	1						2		3											1		
27	Physical Science							1		1							1						
28	Malayalam I		3							4								1			1		
29	English Class 2	1					1			2							1						
30	Maths I	1	1					1		4													
31	Natural Science I		1						1	3							1						
32	Physical Classroom		3							4										1	1		
33	Canteen	1																					
34	Maths 2		1							2							1						
35	Computer Lab	6								4								25	2				
	Total	**42**	**25**	**4**	**83**	**6**	**2**	**15**	**4**	**131**	**1**	**19**	**0**	**0**	**11**	**3**	**7**	**44**	**7**	**3**	**6**	**1**	**1**

1912
CUSTOMER CARE 24X7
KSEB

Demand/Disconnection Notice
(As per Reg 122 of Supply Code-2014)
Ramanattukara Section
0495-2440319
KSEBL-GSTIN:32AAECK2277N8Z1

C#: 1166336002400

Bill# : 6633231200442
Conn.Id : 1135596
Name : PRINCIPAL
FAROOK TRAINING CO
Status : Connected
Tariff : CR121/4
Trans : S S SUHARA
Meter# : 4305903
Bill Area : MOS/3/118
Bill Date : 01/12/2023
Due Date : 11/12/2023
Disconn Dt: 26/12/2023
Tariff : LT-6A NDom
Purpose : Educational Ins
Deposit : 25062

Prev. Payment

Pay Paid Dt : 08-11-2023
Pay Paid Amt : 14006

Main Meter

Meter(MM) Status OK
Load : 24 KW
Demand : 23.372 KVA
Phase : 3
Pay Rd Dt : 01/11/2023
Cons Rd Dt : 01/12/2023
Cons Rd(OMF): 1

Readings & Cons. (MM)

Unit	Curr	Prev	Cons	Avg
KWH/A/1	93822	91720	2102	1482

Bill Details

Fixed Charges	:	1920.00
Meter Rent	:	17.70
Energy Charges	:	13978.30
Duty	:	1397.83
Fuel Sur.	:	189.18
Monthly Fuel Sur.	:	210.20
Round off	:	-0.21
Bill Amount	:	17713.00

Payable : 17713.00

Remarks
Auto Recovery FS @ 10 Paise/unit
Meter Rent:15 CGST 9%: 1.35 SGST 9%: 1.35

Pay Online https://wss.kseb.in
NAIFA RAZAK
1070194
Sub Engineer
SBM:VT -1.47 /11002712
04-12-2023 9:47:45 AM