

ENERGY AUDIT REPORT

ST. ANTONY'S COLLEGE

PERUVANTHANAM

Executed by



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
ST ANTONY'S COLLEGE
PERUVANTHANAM





Energy Audit Report
ST. ANTONY'S COLLEGE, PERUVANTHANAM
Report No: EA 1003
2023



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 2009" 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 St. Antony's College, Peruvanthanam for their 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

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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					
St. Antony's College Peruvanthanam					
SI No	Projects	Investment	Cost saving	SPB	Energy saved
		(Lakhs Rs)	(Rs)/Yr	Months	kWh/Yr
1	Energy Saving in Lighting by replacing existing 61 No's T8 (40W) Lamps to 18W LED Tube	0.18	0.08	27.38	966
2	Energy Saving by replacing existing 135 No's in-efficient ceiling fans with Energy Efficient Five star fans	4.05	1.03	47.31	7672
3	Installation of 60kWp Solar Power Plant	33.00	10.19	38.84	76650
	Total	37.23	11.30	37.84	85289
(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 St. Antony's College, Peruvanthanam by OTTOTRACTIONS in April 2023. OTTOTRACTIONS is an Accredited Energy Auditor of Bureau of Energy Efficiency and Empaneled Energy Auditor of Energy Management Centre, Government of Kerala. The energy audit has identified energy conservation opportunities and recommended projects to improve energy efficiency of the facility.

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

Capping Peruvanthanam hillock in majestic splendour and set in the entrance to the High ranges at Kodikuthy, St. Antony's Peruvanthanam is an index of the aspirations of the educationally deprived sections of the High-land society. This Eco-friendly institution with endemic diversity and evergreen scenery arrests our attention and capture the hearts by its serenity and purity. This ambience provides the setting for creative learning. Spread on 7 acres of lush verdant backdrop at Peruvanthanam in Idukki District. St. Antony's College affiliated to M.G. University and approved by Govt. of Kerala, provides the perfect setting for producing educated citizens by providing both infrastructure and instructional facilities in eight programmes in the fields of

Commerce, Management, Literature and Computer Applications. St. Antony's college aims to impart value-based education to produce intellectually well developed, morally upright, socially matched and spiritually enlightened citizens who could be pivots of various professions in the globalized village. The college has sufficient infrastructure and instructional facilities and amenities for academic, administrative and extracurricular activities that serve as lab and land for education. Besides, the college inculcates hard and soft skills in its budding managers and scholars to face the changes and challenges of tomorrow.

Occupancy Details			
Particulars	2020-21	2021-22	2022-23
Total Students	723	776	951
Staffs	48	53	66
Total Occupancy of the college	771	829	1017

For calculating specific energy consumption, the total built-up area is taken into account.

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. Devan J, Project Engineer
5. Jomon J S, Project Engineer
6. Amrutha A M, Data analyst
7. Anjana B S, Project Assistant.

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Process description

The energy audit has been carried out at St. Antony's College, Peruvanthanam. The following is the baseline data of this building.

Form-A							
BASELINE DATA SHEET FOR GREEN AUDIT							
1	Name of the Organisation	St. Antony's College Peruvanthanam					
2	Address (include telephone, fax & e-mail)	Peruvanthanam, KK Road, Idukki (Dist) 04869 281191,9562581191 principal@stantonyscollegepeerumade.ac.in					
2	Year of Establishment	2013					
3	Name of building and Total No. of Electrical Connections/building	HT (1)					
4	Total Number of Students	Boys		Girls		Total	
5	Total Number of Staff	66					
6	Total Occupancy	1017					
7	Total area of green cover	80%					
8	Type of Electrical Connection	HT	1	LT	0		
9	Total Connected Load (kW)	112.9					
10	Average Maximum Demand (KVA)	25					
11	Total built up area of the building (M ²)	5670					
12	Number of Buildings	1					
13	Average system Power Factor	0.96					
14	Details of capacitors connected (kVAr)	50					
15	Transformer Details (Nos., kVA, Voltage ratio)	TR 1					
		200					
15	DG Set Details (kVA)	DG1	DG2	DG3	DG4	DG5	Remarks
		30					
16	Details of motors	Rating		Nos.		Remarks	
		5 to 10		2			
		10 to 50					
		Above 50					

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Energy and utility system description

3.1.1 Electricity

Electricity is purchased from KSEB under one HT connection the details are given below.

Base line Data (Electricity Bill)	
Code	EA1003
Facility	St. Antony's College Peruvanthanam
Provider	KSEB
Contract Demand (kVA)	70
Connected Load (KW)	113
Tariff	HT II (B) GENERAL
Consumer Number	1357200060681
Energy Charge Rs/ kWh Z1	6.8
Energy Charge Rs/ kWh Z2	10.2
Energy Charge Rs/ kWh Z3	5.1
Demand Charge Rs/ kVA	500
Excess Demand Rs/kVA	250
Energy Bill Analysis interval	2022-23

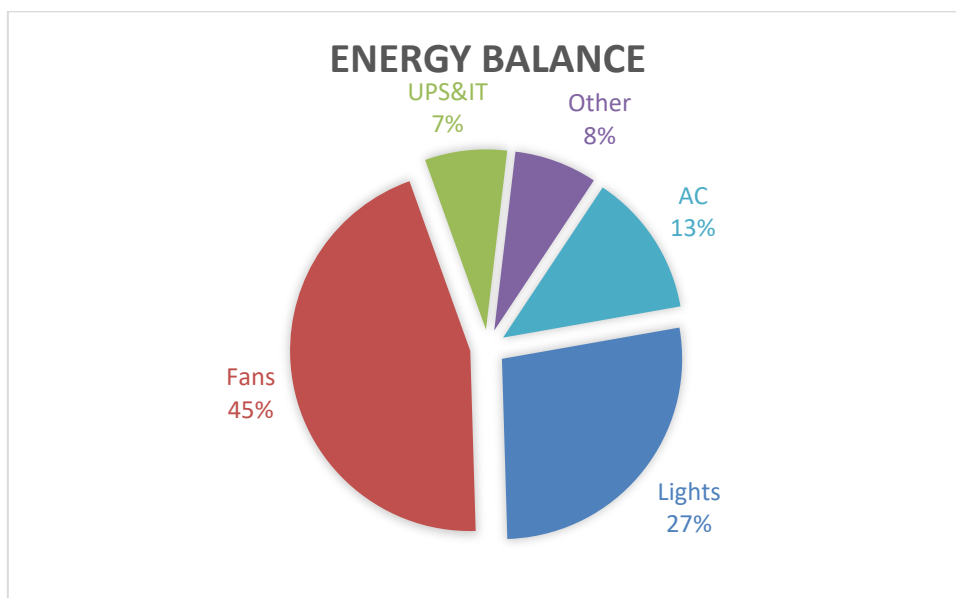
3.2. Thermal Energy / Transportation

Thermal Fuel Consumption			
St. Antony's College Peruvanthanam			
	2020-21	2021-22	2022-23
Annual LPG consumption in kg	228	380	456
Annual Diesel consumption in L	1747	7541	14129
Annual petrol consumption in L	0	0	0
Annual Biogas consumption in m3	0	0	0

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Energy Balance



49 % of the total energy consumed in this facility is used to operate Fans. Lighting uses 27%. IT Equipment uses 7%. Air conditioners uses 13% and Other equipments like pumps, Laboratory equipments etc uses 8% .

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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

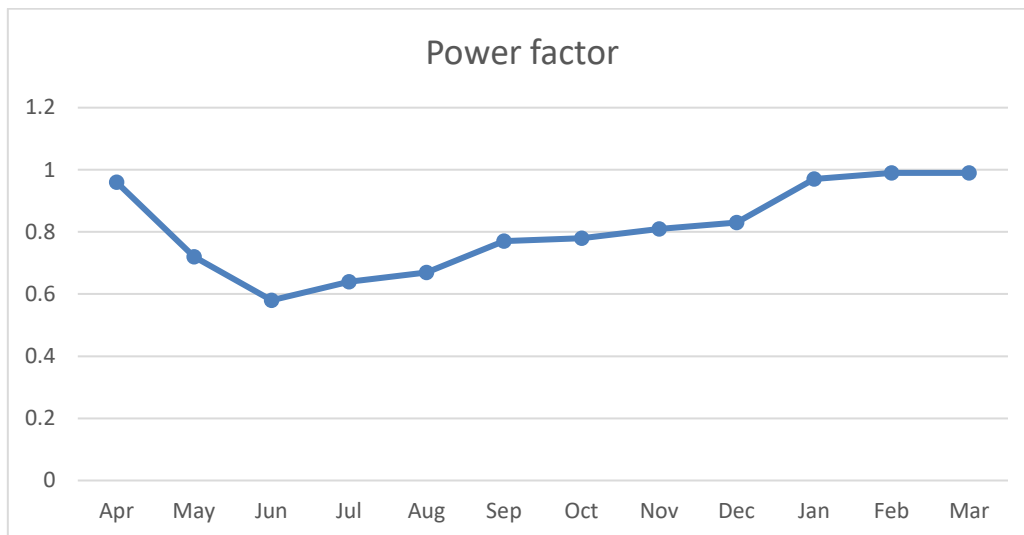
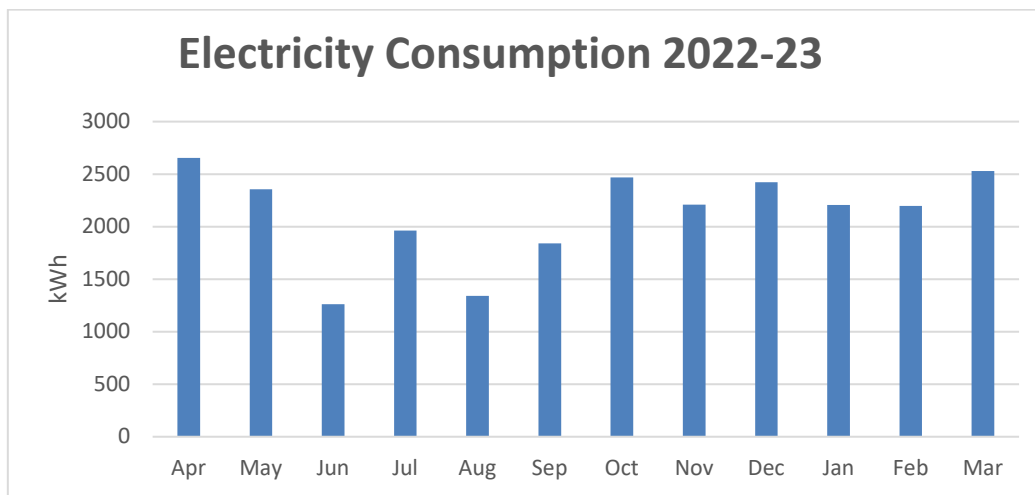
5.2. Results of performance testing

5.2.1. Electrical System

The average unit cost of electricity is **21 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. The electricity is fed from one HT connection.

Electricity Consumption

Annual Electricity Consumption (kWh)				
Consumer No	2020-21	2021-22	2022-23	Connected Load (kW)
1357200060681	19091	21860	25455	113
Total	19091	21860	25455	113



The power factor of the system has been observed to be very low, with an average power factor of 0.80 for the year 2022-23. This has resulted in a penalty payment of 18052 in the last financial year. To avoid such penalties and reduce the demand charge, it is strongly recommended to maintain the power factor at unity.

Diesel

Diesel Consumption Details				
	Transportation	Generator	Total	cost
	in L	in L	in L	in Rs
20-21	1423	323	1747	165956
21-22	6456	1085	7541	716437
22-23	12782	1347	14129	1342260

LPG

LPG Consumption Details			
	2020-21	2021-22	2022-23
No Cylinders	12	20	24
Canteen/Lab LPG Consumption in kg	228	380	456
Total in kg	228	380	456

Base Line Energy Data				
St. Antony's College Peruvanthanam				
	Year	2020-21	2021-22	2022-23
1	Electricity KSEB (kWh)	19091	21860	25455
2	Electricity Solar - Off grid (kWh)	0.00	0.00	0.00
3	Electricity (KSEB + Off grid) kWh	19091	21860	25455
4	Electricity Grid Tied (kWh)	0	0	0
5	Diesel (L)	1747	7541	14129
6	LPG (kg)	228	380	456
7	Biogas (m3)	0.00	0.00	0.00

Energy Consumption Profile				
SI No	Fuel	2020-21	2021-22	2022-23
		(kCal)		
1	Electricity	16418475	18799170	21891300
2	Diesel	18342505	79185142	148355053
3	LPG	2736000	4560000	5472000
4	Biogas	0	0	0
Total		37496980	102544312	175718353

Lighting

Sl No		Light				FAN	
		T8	LEDT	LEDB	LED SQ	CF	WF
1	Conf Hall				20		8
2	Principal						
3	Chairman		2		5		
4	Media room				3		1
5	Guest room				4		
6	Secretary				5		
7	Corridor				20		
8	Admission Cell					5	
9	Classroom	1				4	
10	D4	2				4	
11	D3	1	1			4	
12	D2	2				2	
13	D1	2				2	
14	Office		3			2	
15	Staff room	4				4	
16	Auditorium	6	1			25	
17	Art Lab	2				2	
18	Construction Lab	2				2	
19	BFT 1	2				2	
20	BFT 2	2				2	
21	BBA		2			2	
22	BCA 1	2				3	
23	BCA 2	2				3	
24	C3	2				3	
25	Computer Lab				20		
26	BSc Cyber 1		8			7	
27	BBA 1	2				4	
28	BBA 2	2				4	
29	Management Department	2				3	
30	Library	6				6	
31	First Floor corridor				20		
32	Commerce Department	2				4	

33	B Com F & T 1	1	1			4	
34	B Com F & T 2	3				4	
35	Mcom F & T	1				2	
36	B2		2			1	
37	B1	2				4	
38	B O	2				4	
39	A1	1	1			2	
40	A2	1	1			2	
41	A3	1	1			2	
42	A4	1	1			2	
43	A5	1	1			2	
44	A6	1	1			2	
45	Toilets		12				
46	Canteen			2		5	
	Total	61	38	2	97	135	9

LUX MEASUREMENTS

St. Antony's College Peruvanthanam		
Sl. No	Location	Avg. Lux
1	Office	96
2	Class rooms	94
3	Laboratory	128
4	Computer room	112
5	Staff rooms	96
6	Principal room	95

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Energy efficiency in utility and process system

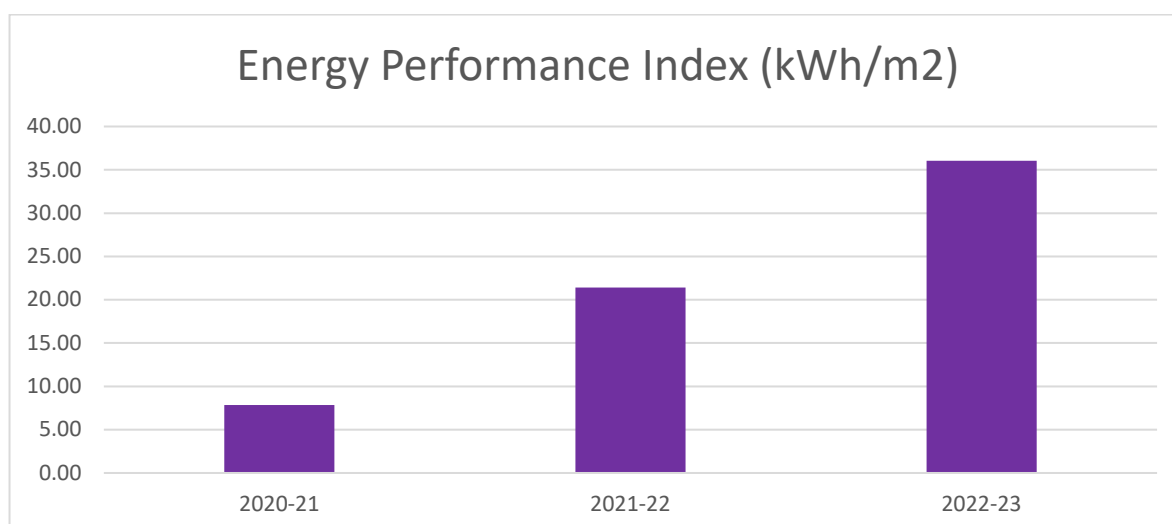
The specific energy consumption is normally taken as the ratio of total energy consumed to the total area of building.

OTTOTRACTIONS- ENERGY AUDIT				
St. Antony's College Peruvanthanam				
Energy Performance Index (EPI)				
Sl No	Particulars	2020-21	2021-22	2022-23
1	Total building area (m ²)	5570	5570	5670
2	Annual Energy Consumption (kCal)	37496980	102544312	175718353
3	Annual Energy Consumption (kWh)	43601	119238	204324
4	Total Energy in Toe	3.75	10.25	17.57
5	Specific Energy Consumption kWh/m ²	7.83	21.41	36.04

The Energy Performance Index (EPI) is

36.04 kWh/m²

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



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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.

ST. ANTONY'S COLLEGE, PERUVANTHANAM

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 service 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
- Conducted Energy Conservation Training Programs

8

Energy Conservation Measures and Recommendations

Executive Summary					
Consolidated Cost Benefit Analysis of Energy Efficiency Improvement Projects					
St. Antony's College Peruvanthanam					
SI No	Projects	Investment	Cost saving	SPB	Energy saved
		(Lakhs Rs)	(Rs)/Yr	Months	kWh/Yr
1	Energy Saving in Lighting by replacing existing 61 No's T8 (40W) Lamps to 18W LED Tube	0.18	0.08	27.38	966
2	Energy Saving by replacing existing 135 No's in-efficient ceiling fans with Energy Efficient Five star fans	4.05	1.03	47.31	7672
3	Installation of 60kWp Solar Power Plant	33.00	10.19	38.84	76650
	Total	37.23	11.30	37.84	85289
(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 Code	
Energy Saving in Lighting by replacing existing 61 No's T8 (40W) Lamps to 18W LED Tube	
Existing Scenario	
61 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	61
Total load (kW)	2.44
Annual Energy Consumption (kWh)	1757
Expected Annual Energy saving for replacing all fittings (kWh)	966
Cost of Power	8.30
Annual saving in Lakhs Rs (1st year)	0.08
Investment required for complete replacements [@Rs 300 per fittings](Lakhs Rs)	0.18
Simple Pay Back (in Months)	27.38

OTTOTRACTIONS- ENERGY AUDIT	
Energy Saving Proposal 2	
Energy Saving by replacing existing 135 No's in-efficient ceiling fans with Energy Efficient Five star fans	
Existing Scenario	
There are 135 numbers of ceiling fans installed in the facility 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	135
Total load (kW)	10.80
Annual Energy Consumption (kWh)	20736
Expected Annual Energy saving, for total replacement(kWh)	7672
Cost of Power (Rs)	13.39
Annual saving in Lakhs Rs (1st year)	1.03
Investment required for a total replacement (Lakhs Rs)[@3000 Rs per Fan with 50W at full speed]	4.05
Simple Pay Back (in Months)	47.31

Energy Saving Proposal	
Installation of 60kWp 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 placed on the roof top it will help in improving RTTV (Roof Thermal Transmittance Value) of the building.	
Proposed System	
It is proposed to have a Solar Power Plant of 50kW 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 an off-grid system. Nowadays the technology provides a trouble-free grid interactive and connected system. The installation will provide 25 years of trouble-free generation with only 20% efficiency loss at the 25th year.	
Financial Analysis	
Proposed Solar installed Capacity (kW)	60
Total average kWh per day expected (3.5kWh/day average)	210.00
Total annual Generating Capacity (kWh)	76650
Cost of energy generated annually Lakhs Rs	10.19
Investment required (INR lakh)(Approx)	33.00
Simple Pay Back (in Months)	38.84
Life cycle in Yrs	25
Total Saving in Life Cycle (Approx) RS lakh	254.86

Technical Supplements

St. Antony's College Peruvanthanam																
SI No		Light				FAN		IT				AC		Others		
		T8	LED T	LED B	LED SQ	CF	W F	T V	P C	PRINTE R	Project or	1	3	Tailorin g Machin e	Fridg e	PA System
1	Conf Hall				20		8				1		2			1
2	Principal											1				
3	Chairman		2		5							1				
4	Media room				3		1					1				
5	Guest room				4							1				
6	Secretary				5							1				
7	Corridor				20			1								
8	Admission Cell					5		1	1			1				
9	Classroom	1				4										
10	D4	2				4										
11	D3	1	1			4										
12	D2	2				2										
13	D1	2				2										
14	Office		3			2			5						1	
15	Staff room	4				4										
16	Auditorium	6	1			25										

17	Art Lab	2				2												
18	Construction Lab	2				2							10					
19	BFT 1	2				2												
20	BFT 2	2				2												
21	BBA		2			2												
22	BCA 1	2				3												
23	BCA 2	2				3												
24	C3	2				3												
25	Computer Lab				20			46	1			2						
26	BSc Cyber 1		8			7												
27	BBA 1	2				4												
28	BBA 2	2				4												
29	Management Department	2				3		1										
30	Library	6				6		1										
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32	Commerce Department	2				4		1										
33	B Com F & T 1	1	1			4												
34	B Com F & T 2	3				4												
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36	B2		2			1												
37	B1	2				4												
38	B O	2				4												
39	A1	1	1			2												

40	A2	1	1			2										
41	A3	1	1			2										
42	A4	1	1			2										
43	A5	1	1			2										
44	A6	1	1			2										
45	Toilets		12													
46	Canteen			2		5				1						
	Total	61	38	2	97	135	9	2	55	2	1	6	4	10	1	1

Electricity Bill Details (2022-23)												
Month	Name of the Consumer				St. Antony's College Peruvanthanam							
	Contract Demand(kVA)		70		Consumer number & Section			1357200060681				
	Tariff		HT II (B) GENERAL					Peruvanthanam				
	kWh				kVA			PF	PF Incentive	PF Penalty	Rs (Total)	Rs/kwh
	Z1	Z2	Z3	Total	Z1	Z2	Z3					
Apr	1589	659	406	2654	21.66	5.58	5.1	0.96	91	0	43319	16.32
May	1864	96	396	2356	22.9	14.7	12.2	0.72	0	2930	42028	17.84
Jun	998	1	263	1262	17.49	3.84	4.56	0.58	0	2560	43689	34.62
Jul	1652	5	306	1963	25	14	15	0.64	0	2627	39527	20.14
Aug	942	82	318	1342	16.75	8.96	5.13	0.67	0	2260	42229	31.47
Sep	1278	191	373	1842	19.9	9.6	4.6	0.77	0	1944	42284	22.96
Oct	1703	260	506	2469	21.9	17	17	0.78	0	2438	48551	19.66
Nov	1532	225	452	2209	22.6	4.2	4.4	0.81	0	1727	46560	21.08
Dec	1812	206	405	2423	24.2	4.3	5	0.83	0	1566	46500	19.19
Jan	1430	268	509	2207	19.66	5.41	4.24	0.97	0	0	43114	19.54
Feb	1643	186	369	2198	19	3	3	0.99	0	0	43837	19.94
Mar	1991	196	343	2530	21	11	2	0.99	0	0	45680	18.06



ST. ANTONY'S COLLEGE PERUVANTHANAM

Accredited by Govt. of Kerala & Affiliated to M.G. University, Kottayam
Peruvanthanam P.O., Kodikuthy, Idukki (Dt.), Kerala - 685 532

GREEN AUDIT

Particulars	2022-23	2021-22	2020-21	2019-2020	2018-19
Number of students	951	776	723	708	741
Number of staff	66	53	48	48	43
Total Building area (m ²)	5670 sqm	5570sqm	5570sqm	5570sqm	5570sqm
Total Land Area(acre)	5.5Acre	5.5 Acre	5.5 Acre	5.5 Acre	5.5 Acre
Total Green cover	80%	90%	90%	90%	90 %
Total Number of trees	156	130	100	95	90

List Of Trees:

1. Jack fruit -7
2. Wild Jack Tree- 5
3. Mango tree -4
4. Coconut palm-10
5. Guava-10
6. Fruit trees-40
7. Bamboo-65
8. Clove – 2
9. Casuarina (kattadi) -1
10. Teak 1
11. Pine -1
12. Gooseberry -2
13. Pomegranate -1
14. Spanish cherry – 1
15. Mahogany Tree – 1

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KERALA STATE ELECTRICITY BOARD LIMITED

Office of the Special Officer(Revenue), Pattom, Thiruvananthapuram

DEMAND NOTICE FOR JANUARY 2022

(As per CHAPTER VII of KERALA ELECTRICITY SUPPLY CODE -2014)

Con. Code	1357200060681	Bill Date	04-Jan-2022	Due Date	11-Jan-2022	Bill.No	2102811940070 Ver : 0
Tariff	HT II (B) GENERAL	DC Date	27-Jan-2022	CD(cash)			136000 BG
St. Antonys College St Antonys College, I-396 B, Peruvanthanam, Idukki., 685532 Mobile no-9562581191 LCN :11/8772				SBI Virtual A/c No(IFS Code:SBIN0070493)-KSEBHT11C8772 KSEBL WISHES all its consumers A VERY HAPPY NEW YEAR Consumer GSTIN_ID -/KSEB (L)GST ID=32AAECK2277NBZ1			

Arrears as on 30-Nov-2021				Date of Previous Reading	30-Nov-2021	Email:	
Disputed		Undisputed	225119	Date of Present Reading	31-Dec-2021	Supply Voltage	11 kV HT
Contract Demand(kVA)	75% of CD (KVA)	130% of CD (KVA)	Connected Load (KW)	Average		Billing Type	DPS
70.0	52.5	91.0	112.9	MD (kVA)	Consumption (kWh)	PF	Section
				21.80	2420	0.93	Peruvanthanam
							Circle
							Thodupuzha

Reading Details of meter 17125387 a-Working (KVA, KWh, KVAh & KVArh) for 12-2021

1. Energy Consumption(KWh)					3. Energy Consumption(KVArh) Lag and KVArh (Lead)								
Zone	FR	IR	MF	Units	Zone	FR	IR	MF	Units	FR	IR	Units	
1	29677.00	28069.00	1.000	1608	1	13133.00	12273.00	1.000	860	7701.00	7692.00	9	
2	4812.00	4507.00	1.000	305	2	3368.00	3172.00	1.000	196	2723.00	2723.00	0	
3	10159.00	9603.00	1.000	556	3	9940.00	9451.00	1.000	489	3755.00	3755.00	0	
				Total	2469				Total kVArh(Lag)	1545	kVArh(Lead)		9

2. Energy Consumption(KVAh)					4. Demand (KVA)			
Zone	FR	IR	MF	Units	Readings		MF	Units
1	34814.00	32934.00	1.000	1880	1	21.69	1.000	21.69
2	6322.00	5957.00	1.000	365	2	13.07	1.000	13.07
3	15544.00	14798.00	1.000	746	3	5.841	1.000	5.84
				Total	2991			

Ave.PF=KWh/KVAh: 0.83

INVOICE

		Unit	Rate (Rs)	Amount (Rs)			Amount	
1.Total Demand Charge				9.Other Charges				
a. Demand Charge - Normal		53.0	440.000	23320.00	Reconnection Fee		0.00	
b. Demand Charge - Peak		0.0	440.000	0.00				
c. Demand Charge - Off peak		0.0	440.000	0.00				
d. Excess Demand Charge (Normal)		0.0	220.000	0.00				
e. Excess Demand Charge(Peak)		0.0	220.000	0.00				
f. Excess Demand Charge (Off peak)		0.0	220.000	0.00				
Sub Total (a+b+c+d+e+f)				23320.00				
2.Total Energy Charges								
a. Energy charges - Normal		1608	6.20000	9969.60				
b. Energy charges - Peak		305.0	9.30000	2836.50				
c. Energy charges - Off peak		556.0	4.65000	2585.40				
Sub Total(a+b+c)				15391.50				
3.PF Incentive / Disincentive						1462.19		
Total Energy Charge				16853.69				
4.Energy Charges on Lighting load								
a.Factory Lighting		0	0.2		10.Total(add 1 to 9)		41774.57	
b.Colony Lighting		0	0.2	0.00	Plus/Minus (Round off)		0.43	
Sub Total(a+b)						UnDisputed Arr Amount		225119.00
5.Electricity Duty		15392	0.100	1539.15	Less			
6.Ele. Surcharge		2469	0.025	61.73	1. Advance / Credit			
7.Duty on self generated energy		0	0.012	0.00	2. CD Interest		0.00	
8.Penalty for non-segn. of light load						3. CD Refund		0.00
						Net Payable		266894.00

(Rupees Two Lakh Sixty Six Thousand Eight Hundred Ninety Four Only)

E & O.E	Balance Advance at Credit, if any
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As per Regulation 130 of Kerala Electricity Supply Code 2014 any complaint regarding accuracy of a bill shall be first taken up with the officer designated to issue the bill (Special Officer(Revenue)). Please follow our official Facebook page fb.com/ksebl for information & announcements.(Please see the instructions overleaf)

SPECIAL OFFICER (REVENUE)

Please Detach and enclose with the DD

1357200060681	2102811940070	Rs.266894.00	January 2022
St. Antonys College	Name of the Bank		Date
DD/Payment Instruction			Signature

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