

JAMAL MOHAMED COLLEGE (Autonomous)

COLLEGE WITH POTENTIAL FOR EXCELLENCE
Accredited (3rd Cycle) with 'A' Grade By NAAC
(Affiliated to Bharathidasan University)

TIRUCHIRAPPALLI – 620020
TAMILNADU, INDIA



ENERGY AUDIT REPORT 2021-2022



AUDIT / REPORT BY



ALCHEME GREEN ENERGY COMPANY

73977 64900

99948 45487

info@alchemegreenenergy.com

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

ACKNOWLEDGEMENT

We at ALCHEME GREEN ENERGY COMPANY, Madurai are thankful to the Principal for giving us the opportunity to carry out Energy audit at Jamal Mohamed College, Trichy -620 020, Tamilnadu, India. Alcheme Green Energy Company team is also thankful to all other supporting Officers / Staffs of the above institute for their wholehearted support, hospitality and the courtesy extended to the Audit team during the course of the visit.

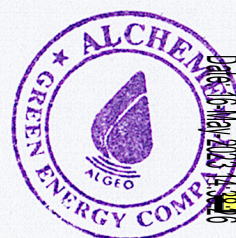
The following officers from Alcheme Green Energy Company under the guidance of Mr. C. Jebaraj, B.Tech., have carried out the Energy Audit.

Name	Qualifications	Certification Number
Mr. C. Jebaraj	B.Tech., PDGEM., DIS., BEE Certificated Energy Auditor, IRCA Certified Lead Auditor –OHSMS, Internal Auditor-QMS CII Certified Carbon footprint Professional	EA-9847
Mr. S. Lakshmana Kumaran	B. Tech., MSc., (Env. Science), MBA., IRCA Certified Lead Auditor ISO 14001 EMS	UID - 351851

The following staff from the Institution participated in the audit process

Name	Designation
Dr. D. I. George Amalarethnam	Associate Professor of Computer Science Coordinator, IQAC
Dr. A. Jafar Ahamed	Associate Professor of Chemistry Core Member, IQAC
Dr. S. Nagoor Gani	Associate Professor of Tamil Coordinator, Khajamian Hostel
Dr. B. Sirajudeen	Assistant Professor of Tamil In-Charge, Campus Maintenance
Mr. M. Shaik Mohideen	Electrician – (Training Instructor- Sp. Gr.)


27/7/22



Digitally Signed
Signed by: SHAIL MOHIDEEN
Reason: NAC
Location: Tamilnadu, India
Date: 27/07/2022 14:00:06

Signature Not Verified

Summary of Audit

Energy audit of Jamal Mohamed College and Hostel was carried by Alcheme Green Energy Company. The Audit team has gone through the data related to TNEB GRID Electrical Energy, Renewable Energy, Diesel and LPG consumption. A study was also carried out on Renewable energy utilisation and Energy Conservation measures to reduce energy consumption.

During the visit it was observed that Jamal Mohamed College strictly follows reduce, reuse and recycle policy to limit energy usage. The concept of energy conservation is disseminated among the students and staffs through various seminars/workshops and training programs.

We hope that the results presented in the energy auditing report will serve as a guide for the institution on the existing energy related practices and resource usage.

Noteworthy

- **Green Energy generation from 50KW of Solar Power Plant**
- **Utilisation of Solar Thermal energy from 3000 LPD Solar Water Heater**
- **Reduction of LPG fuel by utilising Biogas plant**
- **Applying technology to SAVE WATER and ENERGY by Auto power cut off system in waters pumping**

The audit outputs and recommendations are summarised as follows

- Electrical Energy consumption from TNEB during the year 2021-2022 – 11,04,486 units.
- Electrical Energy consumption from Diesel Generator – 14,535 units.
- Solar Power Electrical energy consumption (Women's Hostel)- 40,019 units
- Total Electrical Energy consumption from EB, DG and Solar – 11,59,040 units.
- LPG consumption -20,995 Kgs
- Diesel Consumption for transport -14,690 Litres
- Biogas generation- 15,300 M³
- Replacement of Conventional lights with Energy Efficient LED lights are done on phased manner
- Solar power plant shall be planned in future for HT service.
- More Green energy utilisation shall be planned in the coming years.

ENERGY SAVING POTENTIALS

1. Conventional tube lights shall be replaced with LED tube lights

Replacement cost for 100 LED tube lights-Rs 200x100= RS 20,000

Payback period-5.5 months

Cost savings for 100 LED tube lights-Rs 44,000 / year

Energy savings for 100 LED tube lights-5,500 units/ year

2. Conventional fans shall be replaced with energy efficient fans

Replacement cost for 100 Nos. ENERGY EFFICIENT FAN-Rs 2,800x100= RS 2,80,000

Cost savings for 100 Nos. ENERGY EFFICIENT FAN -Rs 1,65,600 / year

Energy savings for 100 Nos. ENERGY EFFICIENT FAN -20,700 units/ year

Payback period 20 months

- Remaining Conventional Tube lights shall be replaced with LED tube lights in a phased manner
- 5 Star rated Energy efficient electrical equipments shall be procured in future

We are happy to submit this detailed energy audit report to the Jamal Mohamed College

Alcheme Green Energy Company
Madurai



Sl. No.	Content	Page No.
	Summary of Audit	3
1	College TNEB HT Service connection Tariff, Load and Energy consumption details	6
2	College TNEB LT Service connection, Tariff, Load and Energy consumption details	7
3	Total TNEB Electrical energy consumption in the College	8
4	College TNEB LT service number wise energy consumption	9
5	TNEB Electrical Energy consumption in the Men's hostel with respect to each service	17
6	TNEB Electrical Energy consumption in the Women's hostel	18
7	DG set Electrical Energy consumption	19
8	Total Conventional Electrical Energy Consumption	21
9	Renewable Electrical Energy-Solar Electrical energy Consumption	22
10	Total Electrical Energy Consumption -Renewable and Conventional	23
11	Conventional Thermal Energy consumption - LPG	24
12	Conventional Thermal Energy consumption- Diesel	24
13	Renewable Thermal Energy-Solar Water Heater	25
14	Renewable Thermal Energy-Biogas	26
15	Total Energy consumption Electrical (Conventional & Renewable) and Thermal (Conventional & Renewable)	27
16	Renewable and Non-Renewable (Conventional) energy distribution	28
17	Energy Conservation measures followed	29
18	Major Electrical load details	30
19	Audit Findings and Energy saving potentials	36

1. College TNEB HT Service connection Tariff, Connected Load and Energy consumption details for the year 2021-2022

TNEB HT SERVICE CONNECTION DETAILS	
Service Number	06 909 442 0210
Tariff	HT II B
Maximum Demand Permitted	250 KVA

Service no 06909440210													Total
Tariff HT IIB,		Permitted MD-250 KVA					Demand charges Rs 350/KVA						
	Rate Rs/ units	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	
Industrial consumption	6.35	3153	5176	9445	21400	19081	17522	23574	10187	12065	31988	21503	175094
Peak Hr consumption	1.27	0	0	0	0	0	0	0	0	0	0	0	0
Night hr consumption	0.3175	0	0	0	0	0	0	0	0	0	0	0	0
Quarters consumption	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial consumption	8.05	1095	472	430	484	484	595	442	268	388	580	389	5627
Temp supply consumption	12	840	642	761	892	585	665	910	816	841	1218	1050	9220
Total units		5088	6290	10636	22776	20150	18782	24926	11271	13294	33786	22942	189941
Total amount in Rs		130400	130243	158534	246397	222729	217982	256808	165413	178277	328940	248355	2284078
overall unit cost in Rs		25.63	20.71	14.91	10.82	11.05	11.61	10.30	14.68	13.41	9.74	10.83	

HT Service Energy Consumption details for the year 2021-2022

HT Tariff II B- Consumption	175094	units
HT Commercial Consumption	5627	units
HT Temp Supply	9220	units
Total	189941	units

2.College TNEB LT Service connection Tariff, Connected Load and Energy consumption details for the year 2021-2022

TNEB LT SERVICE CONNECTION DETAILS				
Sl.No	SERVICE NO	Department	Tariff	connected load in KW
1	06 222 207 544	Computer	LM2B2/ LTCT	94.99
2	06 222 207 1131	MBA	LM2B2/ LTCT	82
3	06 222 207 509	Tamil	LM 2B1/ LT	48
4	06 222 207 13	General Library COE Office	LM 2B1/ LT	36
5	06 222 207 14	Maths	LM 2B1/ LT	48
6	06 222 207 15	Main Gate	LM 2B1/ LT	5.99
7	06 222 207 16	Principial Office	LM 2B1/ LT	40.08
8	06 222 207 17	Main Building	LM 2B1/ LT	48
	Total			403.06

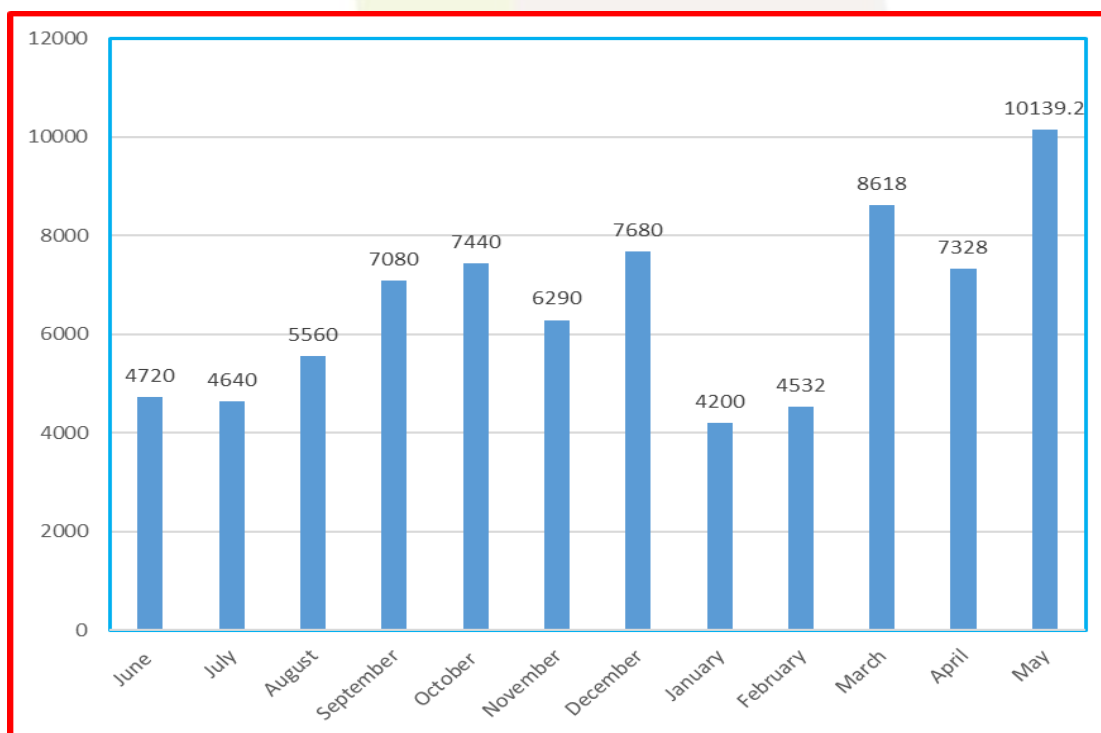
TNEB ENERGY CONSUMPTION					
Sl. No	SERVICE NO	Tariff	Units Consumed	Bill Amount -Rs	Average Unit cost-Rs
1	06 222 207 544	LM2B2/ LTCT	78227.2	685792	8.77
2	06 222 207 1131	LM2B2/ LTCT	57640	515515	8.94
3	06 222 207 509	LM 2B1/ LT	16890	137151	8.12
4	06 222 207 13	LM 2B1/ LT	30291	209445	6.91
5	06 222 207 14	LM 2B1/ LT	44380	303111	6.83
6	06 222 207 15	LM 2B1/ LT	3620	26278	7.26
7	06 222 207 16	LM 2B1/ LT	61520	411364	6.69
8	06 222 207 17	LM 2B1/ LT	64500	427256	6.62
	Total		357068.2	2715912	

3.Total TNEB Electrical Energy Consumption in the college

	HT Service units	
1	HT II B	175094
2	HT Commercial	5627
3	HT Temp	9220
	LT SERVICE	
1	LM 2B2- 2 Nos	135867
2	LM 2B1- 6 Nos	221201
	Total	547009

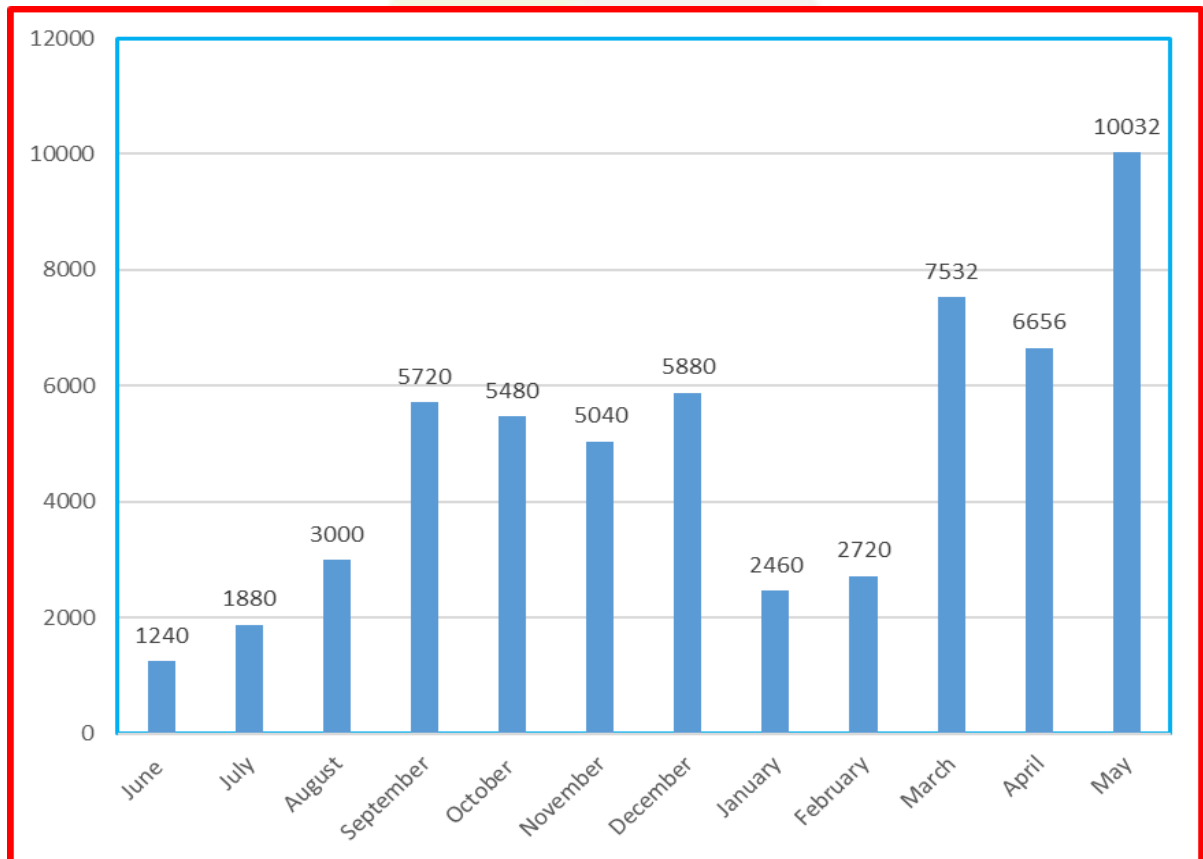
4.College TNEB LT service number wise energy consumption

1.Service No 06 222 207 544 94.99 KW 3 Phase Tariff LM2B2					
Sl. No.	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	30.06.2021	June	4720	42921	9.09
2	31.07.2021	July	4640	42300	9.12
3	31.08.2021	August	5560	49569	8.92
4	30.09.2021	September	7080	61626	8.70
5	30.10.2021	October	7440	64470	8.67
6	30.11.2021	November	6290	55005	8.74
7	31.12.2021	December	7680	66354	8.64
8	31.01.2022	January	4200	38904	9.26
9	28.02.2022	February	4532	41537	9.17
10	31.03.2022	March	8618	73678	8.55
11	30.04.2022	April	7328	63645	8.69
12	30.05.2022	May	10139.2	85783	8.46
	Total		78227.2	685792	8.77



Month wise Energy Consumption

2.Service No 06 222 207 1131 82 KW 3 Phase Tariff LM2B2					
Sl. No.	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	30.06.2021	June	1240	14751	11.90
2	31.07.2021	July	1880	19800	10.53
3	31.08.2021	August	3000	28629	9.54
4	30.09.2021	September	5720	50109	8.76
5	30.10.2021	October	5480	48228	8.80
6	30.11.2021	November	5040	44748	8.88
7	31.12.2021	December	5880	51384	8.74
8	31.01.2022	January	2460	24413	9.92
9	28.02.2022	February	2720	26481	9.74
10	31.03.2022	March	7532	64764	8.60
11	30.04.2022	April	6656	58046	8.72
12	30.05.2022	May	10032	84162	8.39
	Total		57640	515515	8.94

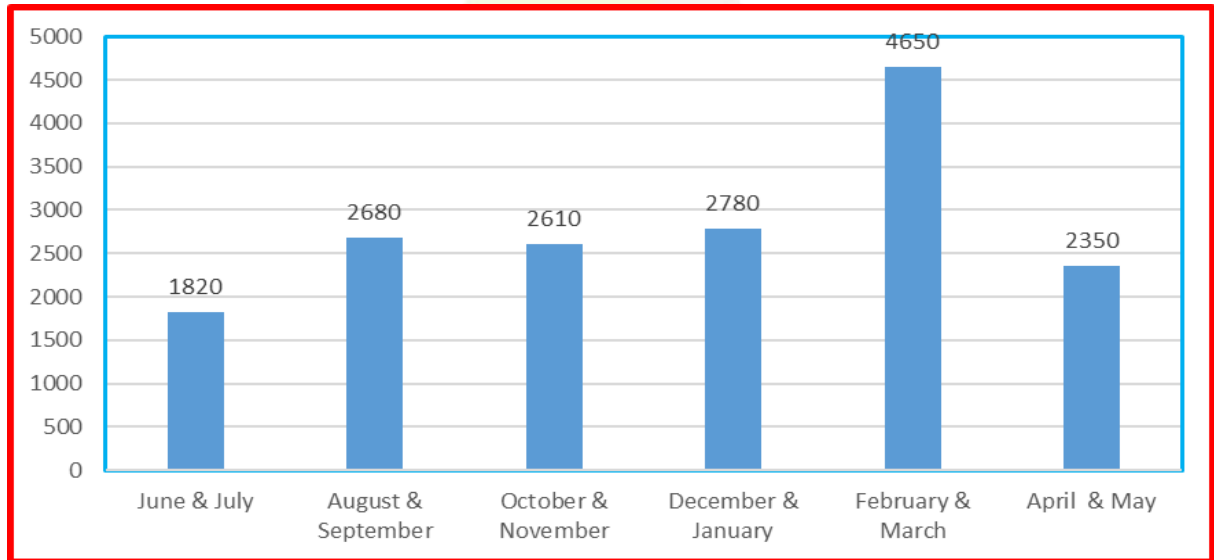


Month wise Energy Consumption

Signature Not Verified

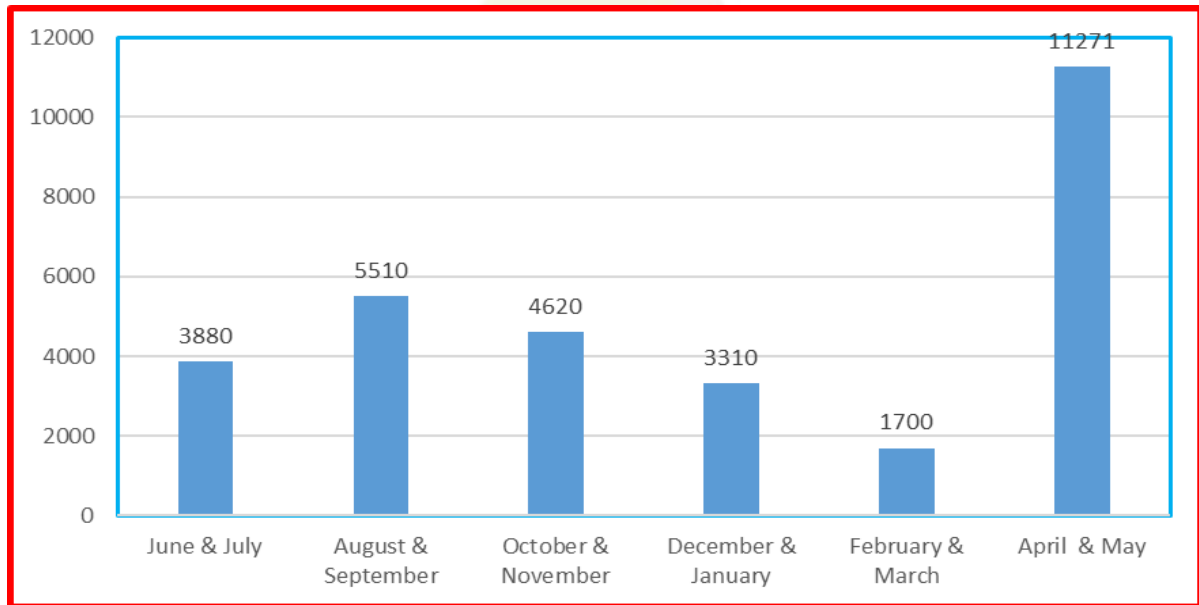
Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

3.Service No 06 222 207 509 48 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2021	June & July	1820	16802	9.23
2	27.10.2021	August & September	2680	22037	8.22
3	22.12.2021	October & November	2610	21632	8.29
4	24.02.2022	December & January	2780	22646	8.15
5	23.04.2022	February & March	4650	34014	7.31
6	22.06.2022	April & May	2350	20020	8.52
	Total		16890	137151	8.12



Bi Monthly Energy Consumption

4.Service No 06 222 207 13 36 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2021	June & July	3880	27854	7.18
2	23.10.2021	August & September	5510	37713	6.84
3	22.12.2021	October & November	4620	32315	6.99
4	24.02.2022	December & January	3310	24364	7.36
5	21.04.2022	February & March	1700	14692	8.64
6	24.06.2022	April & May	11271	72507	6.43
	Total		30291	209445	6.91

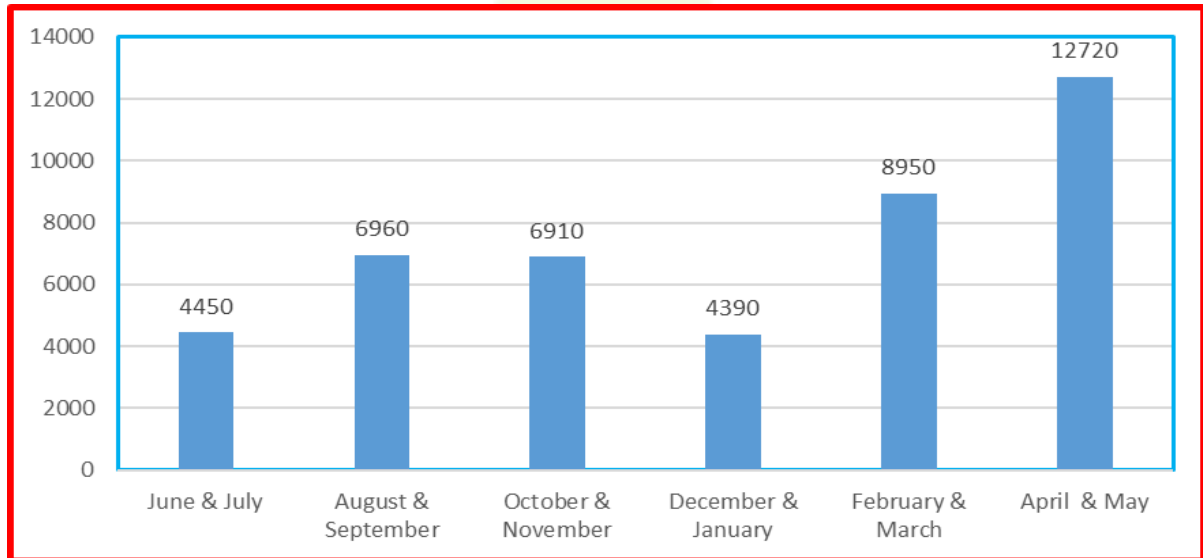


Bi Monthly Energy Consumption

Signature Not Verified

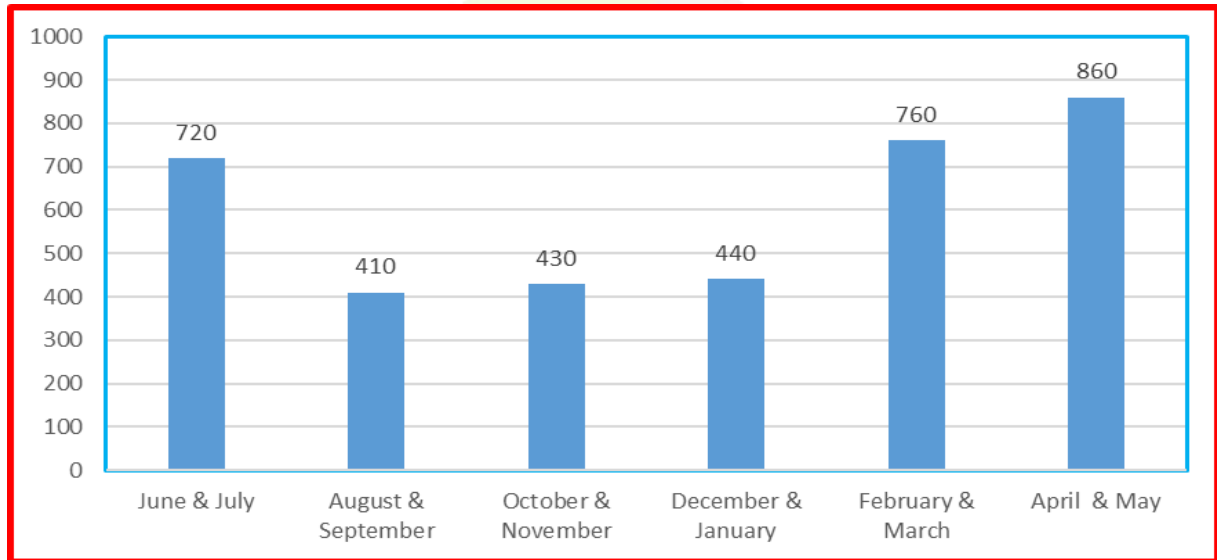
Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

5.Service No 06 222 207 14 48 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2021	June & July	4450	32783	7.37
2	23.10.2021	August & September	6960	47949	6.89
3	22.12.2021	October & November	6910	47683	6.90
4	24.02.2022	December & January	4390	32331	7.36
5	21.04.2022	February & March	8950	60030	6.71
6	24.06.2022	April & May	12720	82335	6.47
	Total		44380	303111	6.83



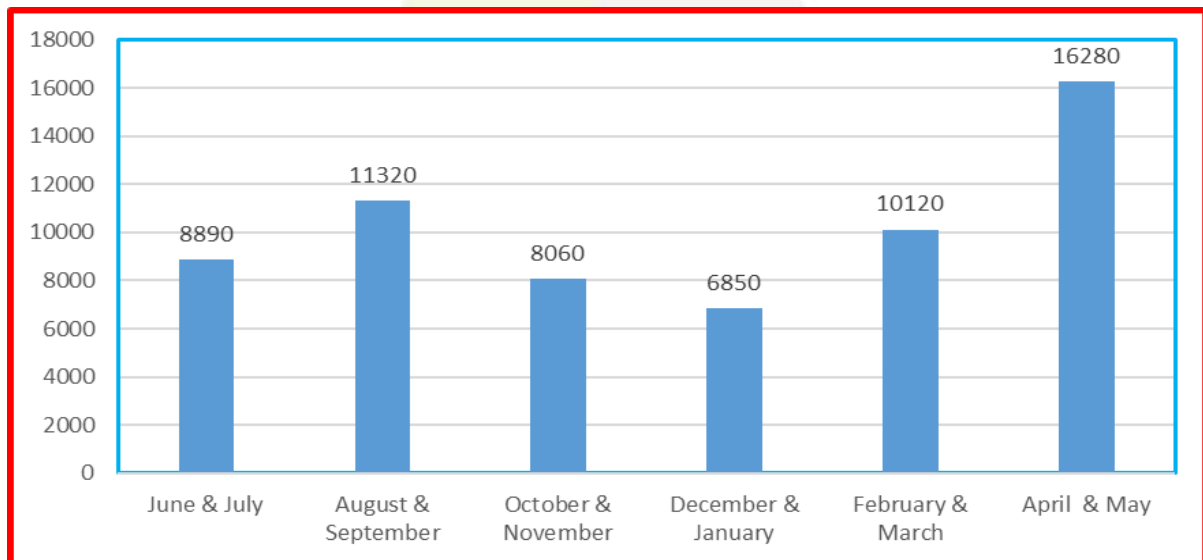
Bi Monthly Energy Consumption

6.Service No 06 222 207 15 5.99 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2021	June & July	720	5085	7.06
2	23.10.2021	August & September	410	3213	7.84
3	22.12.2021	October & November	430	3322	7.73
4	24.02.2022	December & January	440	3383	7.69
5	21.04.2022	February & March	760	5339	7.03
6	24.06.2022	April & May	860	5936	6.90
	Total		3620	26278	7.26



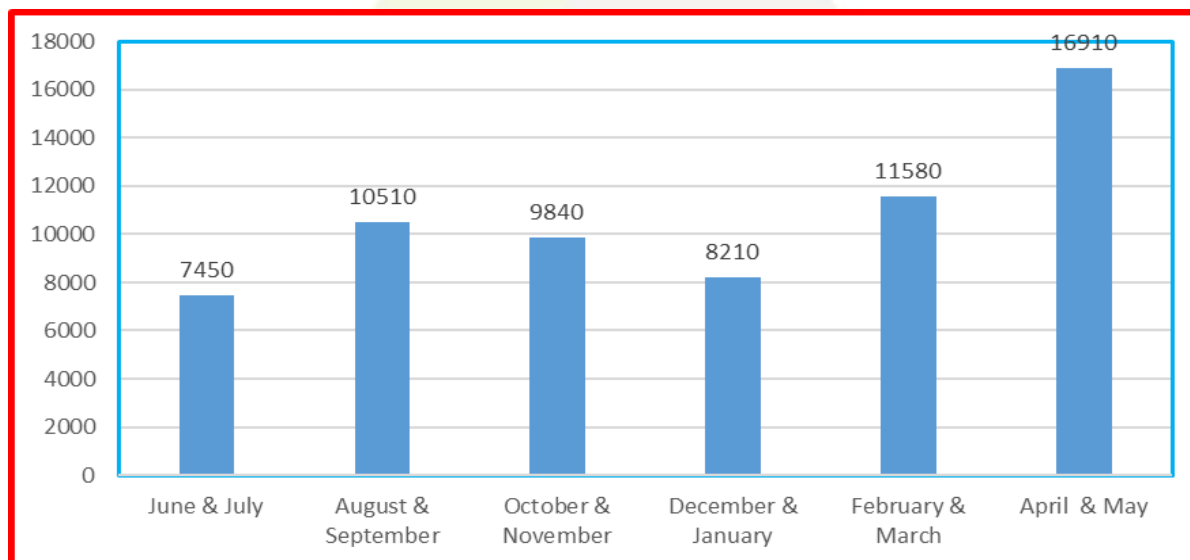
Bi Monthly Energy Consumption

7.Service No 06 222 207 16 40.08 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2021	June & July	8890	58827	6.62
2	23.10.2021	August & September	11320	73475	6.49
3	22.12.2021	October & November	8060	53732	6.67
4	24.02.2022	December & January	6850	46415	6.78
5	21.04.2022	February & March	10120	67534	6.67
6	24.06.2022	April & May	16280	111381	6.84
	Total		61520	411364	6.69



Bi Monthly Energy Consumption

8.Service No 06 222 207 17 48 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2021	June & July	7450	50853	6.83
2	23.10.2021	August & September	10510	69436	6.61
3	22.12.2021	October & November	9840	65379	6.64
4	24.02.2022	December & January	8210	55454	6.75
5	21.04.2022	February & March	11580	75920	6.56
6	24.06.2022	April & May	16910	110214	6.52
	Total		64500	427256	6.62



Bi Monthly Energy Consumption

5. TNEB Electrical yearly energy consumption in the Men's hostel with respect to each service number

Sl.No	Service number	Tariff	Energy consumption in units (KWH)	Load in KW
1	06 222 207 26	LM2B2	49340	15
2	06 222 207 27	LM2B2	3440	13.73
3	06 222 207 28	LM2B2	1890	4
4	06 222 207 29	LM2B2	3800	3
5	06 222 207 30	LM61	10440	1.75
6	06 222 207 31	LM2B2	4560	3
7	06 222 207 32	LM2B2	3670	1.75
8	06 222 207 33	LM2B2	30070	21
9	06 222 207 34	LM2B2	48740	17
10	06 222 207 35	LM2B2	7440	27
11	06 222 207 36	LM2B2	3900	5.6
12	06 222 207 37	LM2B2	35040	12
13	06 222 207 38	LM2B2	14090	8
14	06 222 207 39	LM2B2	2650	4.52
15	06 222 207 350	LM51	10030	10
16	06 222 207 1046	LM2B2	14250	12
17	06 222 207 1101	LM2B2	37320	17
18	06 222 207 1289	LM2B2	96200	34
19	06 222 207 1519	LM61	1000	10
20	06 222 207 1874	LM2B2	15111	50
21	06 222 207 1875	LM 51	4000	4
	Total		396981	274.35

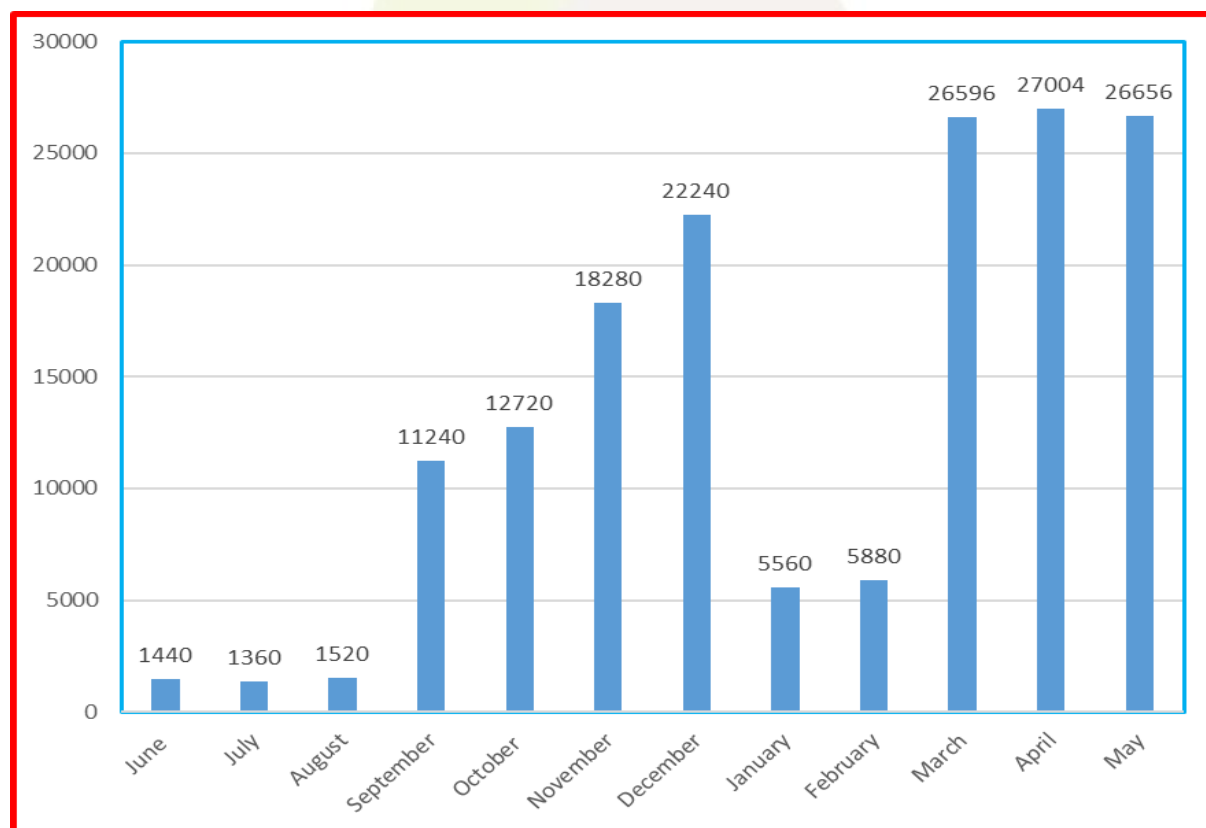
Service wise yearly energy consumption

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

6. TNEB Electrical Energy consumption in the Women's hostel

Service No 06 222 207 1045 85.5 KW 3 Phase Tariff LM2B2					
Sl. No.	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	30.06.2021	June	1440	16527	11.48
2	31.07.2021	July	1360	15900	11.69
3	31.08.2021	August	1520	17163	11.29
4	30.09.2021	September	11240	93780	8.34
5	30.10.2021	October	12720	105444	8.29
6	30.11.2021	November	18280	149271	8.17
7	31.12.2021	December	22240	180492	8.12
8	31.01.2022	January	5560	49110	8.83
9	28.02.2022	February	5880	51633	8.78
10	31.03.2022	March	26596	214811	8.08
11	30.04.2022	April	27004	217934	8.07
12	30.05.2022	May	26656	215307	8.08
	Total		160496	1327372	8.27



Month wise Energy Consumption

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

7. DG set Electrical Energy consumption

Electrical Energy Consumption from DG sets-14,535 units

DG sets in Aided Section

SI No	Block	Power Capacity
1	Main Gate	30 KVA
2	MBA	125 KVA
3	Controller of exam	63 KVA
4	Zoology, ARABIC	63 KVA
5	Maths, Economis	63 KVA
6	Principal Office, Aided office	63 KVA
7	Physics, Chemistry	63 KVA
8	Commerce, English	63 KVA
9	Computer science	125 KVA

DG sets in Self Finance Section

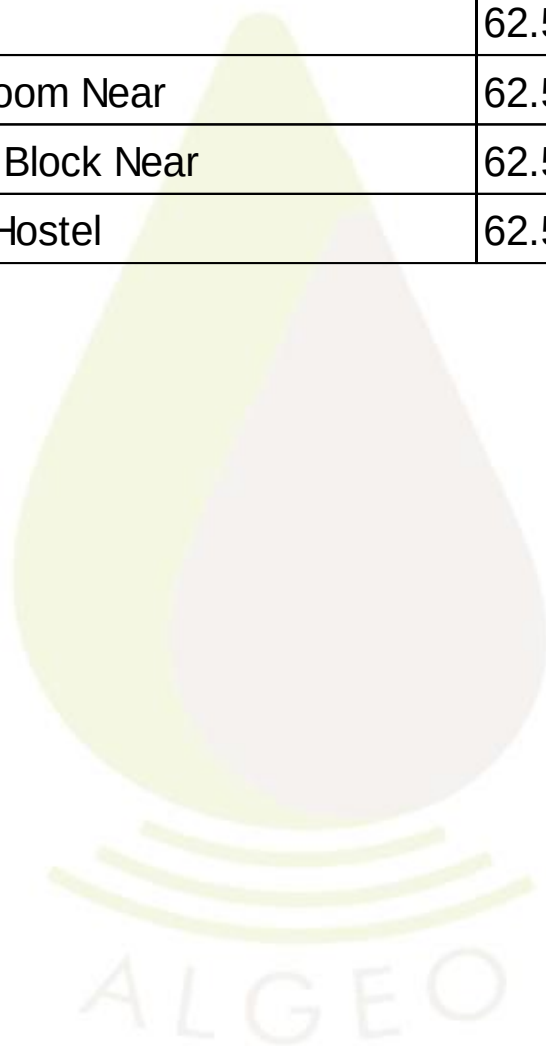
SI No	Block	Power Capacity
1	Information Technology	125 KVA
2	Fashion Technology	63 KVA
3	English, Maths, Tamil	63 KVA
4	Microbiology, Biotech	63 KVA
5	BBA, Physics	63 KVA
6	Auditorium, Commerce, Hotel Management	125 KVA

DG sets in women's Hostel

SI No	Block	Power Capacity
1	Dubai Block, Dubai Alumini Block	120 KVA
2	UGC Block , New mess	83 KVA

DG sets in Men's Hostel

Sl No	Block	Power Capacity
1	Mess 5	63 KVA
2	Mess 5	62.5 KVA
3	Motor room Near	62.5 KVA
4	Burunei Block Near	62.5 KVA
5	Sports Hostel	62.5 KVA



8.Total Conventional Electrical Energy Consumption details

	Electrical Energy Consumption -TNEB and DG	
	TNEB-College	units
1	HT service	189941
2	LT service	357068
	TNEB-Hostel	
1	Men's Hostel	396981
2	Women's Hostel	160496
	TNEB Total	1104486
	DG Set	
1	Both College and Hostel	14535
	Total	1119021

9. Renewable Electrical Energy-Solar Electrical energy Consumption

Installed capacity -50KW

Energy Generation from installation-1,69,468 units

Energy Generation during the year 2021-2022-40,019 units



10.Total Electrical Energy Consumption -Renewable and conventional

	Total Electrical Energy Consumption - Renewable and Conventional	
	TNEB-College	units
1	HT service	189941
2	LT service	357068
	TNEB-Hostel	
1	Men's Hostel	396981
2	Women's Hostel	160496
	DG Set	
1	Both College and Hostel	14535
	Solar	
	Hostel	40019
	Total	1159040

11. Conventional Thermal Energy consumption - LPG

- LPG cylinders used- commercial cylinders of 19 kgs capacity
- Total LPG consumption during the year 2021-2022- 20,995 Kgs

12. Conventional Thermal Energy consumption- Diesel

Diesel Consumption for transport during the year 2021-2022 – 14,690 Litres



ALGEO

13.Renewable Thermal Energy-Solar Water Heater

Solar Water Heater installed-1000 LPD- one

500 LPD- Four

Total Capacity-3,000 LPD



14. Renewable Thermal Energy- Biogas

Biogas plants installed- 25 M3 capacity X 2(Each one at Men & Women Hostel)

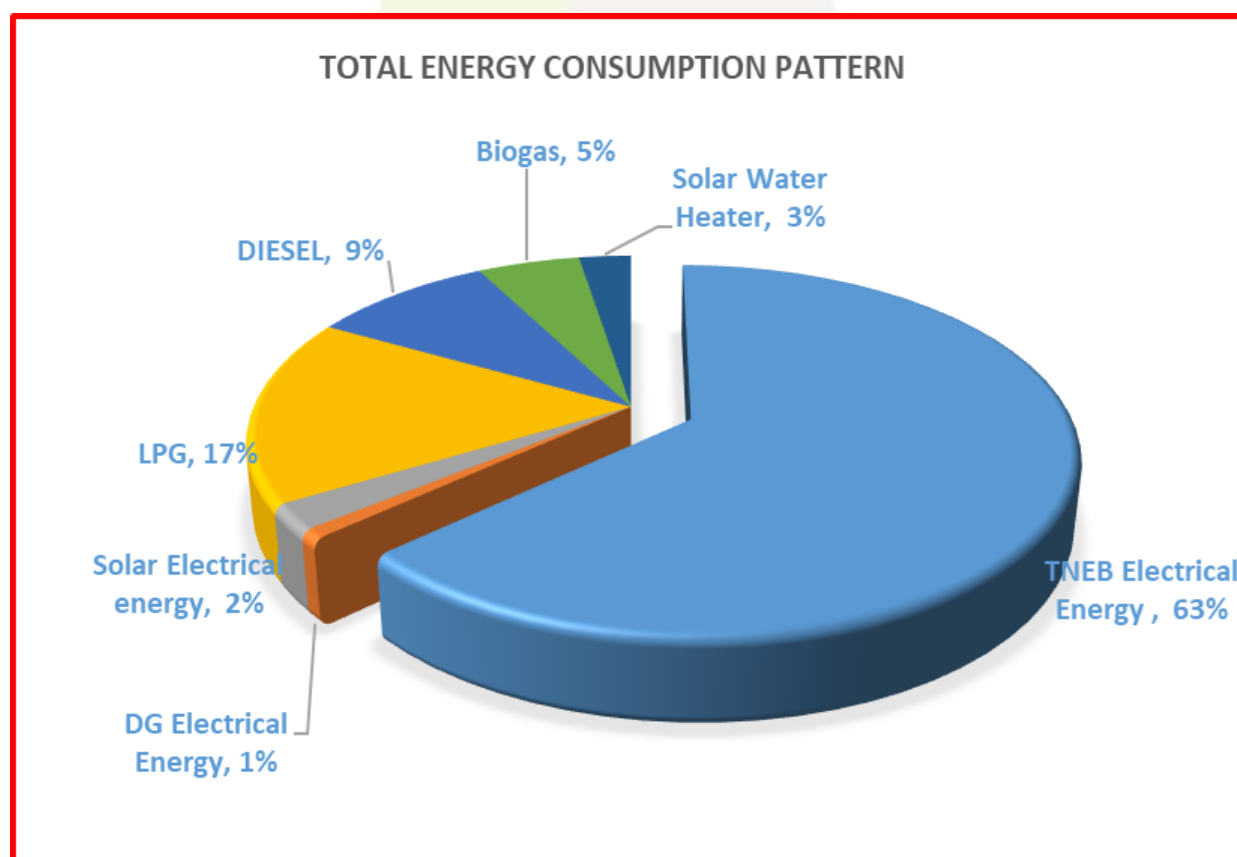
35 M3 capacity X 1(Men Hostel)



15.Total Energy consumption

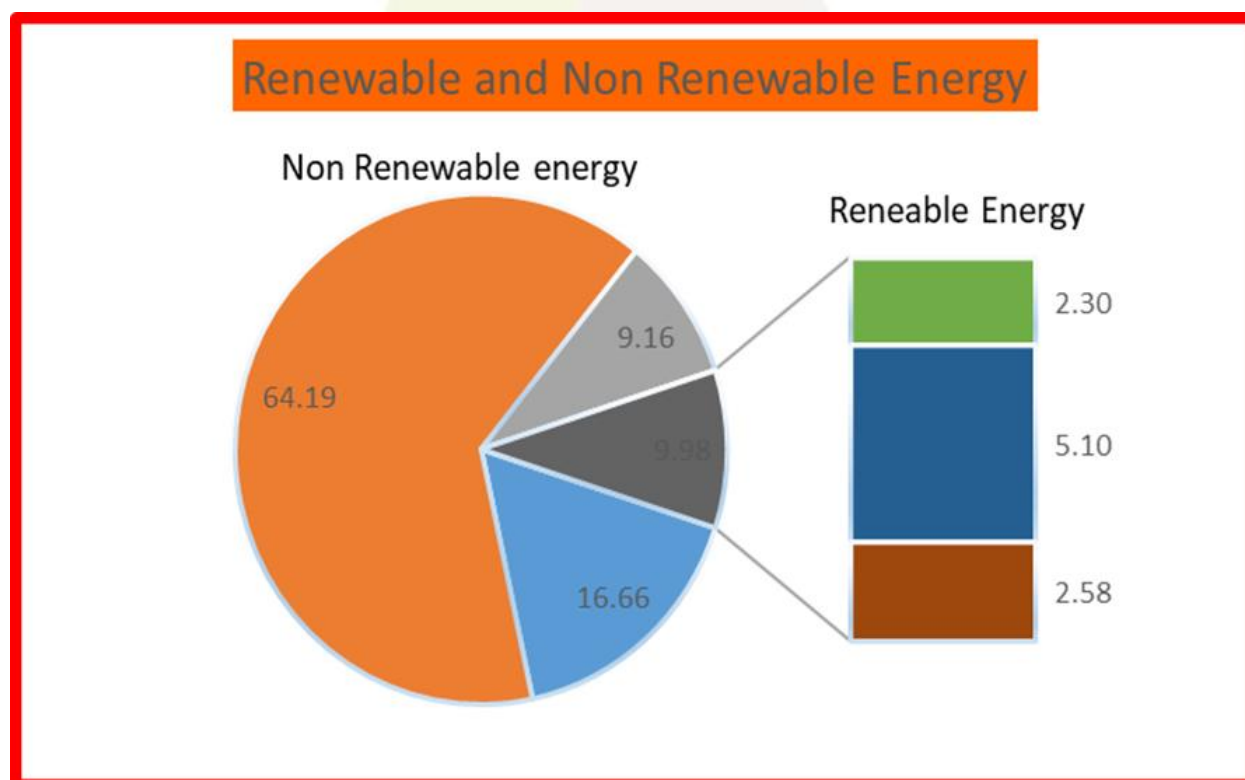
Electrical (Conventional & Renewable) and Thermal (Conventional & Renewable)

SL.NO	TYPE OF ENERGY	ENERGY -GCAL		Percentage
1	TNEB Electrical Energy	949.86	0.633572123	63.36
2	DG Electrical Energy	12.50	0.008337789	0.83
3	Solar Electrical energy	34.42	0.02295631	2.30
3	LPG	249.84	0.166648049	16.66
4	DIESEL	137.40	0.091645284	9.16
5	Biogas	76.50	0.051026858	5.10
6	Solar Water Heater	38.70	0.025813587	2.58
	Total	1499.2		100.00



16.Renewable and Non-Renewable (Conventional) energy distribution

ENERGY CONSUMPTION	PERCENTAGE		Total
NON RENEWABLE			
LPG	16.66		
TNEB AND DG ELECTRICAL ENERGY	64.19		
DIESEL	9.16		90.02
RENEWABLE			
SOLAR Electrical	2.30		
Biogas	5.10		
Solar Water Heater	2.58		9.98



17.The energy conservation measures followed

- Lights and fans are switched off by the students whenever they are out of hostel rooms.
- Work supervisor and electrician regularly check the usage of lights, fans and all other energy sources during and out of the College hours.
- Replacing conventional electrical light fittings with energy efficient Light-Emitting Diode (LED) bulbs is going on as continuous process.
- The fans, lights, air-conditioners and other electronic and electrical equipments are switched off when not in use.
- At the end of every practical session, Computer monitors are switched off.
- Periodical maintenance and overhauling of generators are being carried out.
- Computers are switched to sleep mode or hibernate mode automatically when not in use.
- Staff and Students are made aware of using public transport and College buses and individual vehicle usage is being reduced.
- Soft copies are maintained instead of hard copies, to reduce power consumption and paper.
- Periodical maintenance of UPS and Battery systems are carried out.
- Auto Level controller is provided in all water storage tanks to avoid overflow of water and to save energy.
- Maximum utilisation of day lights at the hostels and College.

18. Major Electrical loads

UPS load details

JAMAL MOHAMED COLLEGE (AIDED)

Sl.No	DEPARTMENT	CAPACITY & VDC	MAKE	TYPE	FLOOR/ PLACE
1	LIBRARY (JMC)	3KVA/96VDC	NEMERIC	DIG	GROUND FLOOR
2	ATTENDANCE	2KVA/24VDC	KEVIN	DIG	GROUND FLOOR
3	SECURITY GATE	650VA/12VDC	ASSEMBLING	REG	GROUND FLOOR
4	AUM IBRAHIM BLOCK (C.S AIDED)	10KVA/360VDC	GLOBAL	REG	GROUND FLOOR
		1KVA/36VDC	CONSUL	DIG	GROUND FLOOR
5	DEAN OFFICE	850VA/12VDC	SUKAM	DIG	DEAN OFFICE
6	MATHEMATICS	10KVA/240VDC	CONSUL	DIG	1st FLOOR
7	SECRETARY SIR ROOM	2KVA/24VDC	KEVIN	REG	GROUND FLOOR
8	COLLEGE OFFICE	2KVA/96VDC	CONSUL	REG	GROUND FLOOR
9	COLLEGE OFFICE	6KVA/120VDC	RPC	REG	GROUND FLOOR
10	PRINCIPAL ROOM	1450VA/24VDC	ASSEMBLING	REG	GROUND FLOOR
11	ARABIC	6KVA/120VDC	GLOBAL	REG	1st FLOOR
12	ECONOMICS	1KVA/36VDC	NUMERIC	DIG	1st FLOOR
13	PHYSICS	2KVA/72VDC	ASSEMBLING	DIG	1ST FLOOR
14	CHEMISTRY	5KVA/120VDC	CONSUL	REG	GROUND FLOOR
15	WI FI & CCTV UPS	5KVA/48VDC	EXIDE	REG	1st FLOOR
16	ERP ROOM	5KVA/48VDC	EXIDE	REG	GROUND FLOOR
17	INTERCOM DEPT	1450VA/24VDC	KEVIN	REG	GROUND FLOOR
18	GUESTHOUSE	850VA/12VDC	ASSEMBLING	REG	1st FLOOR
19	UGC NODAL OFFICE	1450VA/24VDC	KEVIN	REG	1st FLOOR
20	CS DEPARTMENT	850VA/12VDC	KEVIN	REG	GROUND FLOOR
21	PRINCIPAL ROOM	2KVA/96VDC	CONSUL	DIG	GROUND FLOOR

(KHAJAMIAN HOSTEL)

S.No	DEPARTMENT	CAPACITY & VDC	MAKE	TYPE	FLOOR/ PLACE
1	KHAJAMIAN NET LAB				
2	KHAJAMIAN OFFICE	3KVA/36VDC	ASSEMBLING	REG	GROUND FLOOR
3	AUDITORIUM	3KVA/36VDC	ASSEMBLING	REG	GROUND FLOOR
4	1st MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
5	2nd MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
6	3rd MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
7	4th MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
8	5th MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
9	6th MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR

**JAMAL MOHAMED COLLEGE UPS DETAILS
(SELF FINANCE)**

S.No	DEPARTMENT	CAPACITY & VDC	MAKE	TYPE	FLOOR/ PLACE
1	NEW MBA ALMANHAL BLOCK	850VA/12VDC	KEVIN	REG	FRONT OFFICE
2	MBA JEDDAH ALUMNI BLOCK	5KVA/120VDC	CONSUL	REG	1st FLOOR
		20KVA/360VDC	CONSUL	DIG	GROUND FLOOR
		2KVA/96VDC	CONSUL	DIG	2nd FLOOR
		5KVA/192VDC	CONSUL	REG	GROUND FLOOR
		1.5KVA/24VDC	KEVIN	REG	GROUND FLOOR
3	SELF FINANCE OFFICE (MEN)	2KVA/96VDC	NEMERIC	DIG	MEN S.F OFFICE
		1KVA/36VDC	NEMERIC	DIG	MEN S.F OFFICE
		2KVA/96VDC	NEMERIC	DIG	WOMEN COM LAB
		1KVA/36VDC	NEMERIC	DIG	MEN S.F OFFICE
4	CONTROLLER OFFICE	6KVA/120VDC	GLOBAL	REG	1st FLOOR
5	IT DEPARTMENT	3KVA/96VDC	CONSUL	DIG	1 ST FLOOR
		1KVA/36VDC	NEMERIC	DIG	1st FLOOR
		5KVA/240VDC	NUMERIC	DIG	2nd FLOOR
6	STUDENT BROWSING CENTRE	5KVA/240VDC	CONSUL	DIG	1st FLOOR
7	MSW	1KVA/36VDC	NUMERIC	DIG	GROUND FLOOR
8	BIOTECH & MICRO BIOLOGY	1.5KVA/24VDC	KEVIN	REG	GROUND FLOOR
9	HUSAINUDEEN HALL	1450V A/24VDC	KEVIN	DIG	GROUND FLOOR
10	SF WOMEN OFFICE	1450VA/24VDC	KEVIN	REG	GROUND FLOOR
11	A/C AUDITORIAM	1450VA/24VDC	KEVIN	DIG	GROUND FLOOR
12	MANAGEMENT OFFICE	1KVA/36VDC	CONSUL	DIG	GROUND FLOOR
13	BIO INFORMATICS	1KVA/36VDC	CONSUL	DIG	1st FLOOR
14	POWER ROOM	850VA/12VDC	KEVIN	REG	GROUND FLOOR

(PG NEW HOSTEL)

S.No	DEPARTMENT	CAPACITY & VDC	MAKE	TYPE	FLOOR/ PLACE
1	PG OFFICE	1450VA/24VDC	ASSEMBLING	REG	GROUND FLOOR
2	OFFICE	1450VA/24VDC	KEVIN	REG	GROUND FLOOR
3	NEW MESS	1050VA/12VDC	KEVIN	REG	GROUND FLOOR
4	OLD MESS	850VA/12VDC	BASS	REG	GROUND FLOOR

AC Load details

DEPT	MAKE	MODEL		No of A.C.
		WINDOW	SPLIT	
Bio-technology	Voltas		4	14
	Voltas			
	O. G		10	
	O. G			
Microbiology	O. G	1	2	11
	O. G			
	Carrier	1		
	Bluestar		7	
Bio-informatics	Onida		4	4
Hotel Mgt	O. G	1		3
	Carrier	1		
	Voltas		1	
GCC	Voltas		4	5
	Daikin		1	
Guest House	Carrier		2	3
	Voltas		1	
Commerce	L.G.		10	14
	Carrier	4		
Zoology	O. G	2		9
	Voltas	1	2	
	LG		3	
	Blue star		1	
Physics	O. G	3		7
	Voltas		1	
	Carrier	2		
	LG		1	
Student Browsing	LG		5	5
I.T. Block	Godrej		12	44
	O. G		5	
	Blue Star		2	
	LG		25	
Principal Room	Carrier	2		6
	LG		1	
	OG		3	
V.P Room	Daikin		1	1
Secretary room	O. G		2	5

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

	Daikin		2	
	LG		1	
Conference hall	O. G		3	3
Botany Dept	L.G		3	7
	Voltas		2	
M.B.A	Blue Star		2	42
	O. G		34	
	Carrier	1		
	Onida		5	
	Voltas		1	
Urdu CS Lab	LG		1	2
COE	L.G		2	17
	Carrier	2		
	Samsung		1	
	LG		1	
	OG		2	
New M.B. A	Voltas		11	44
	O. G		37	
	Onida		1	
Maintenance	Blue star		6	1
	O. G		1	
Masjid	Voltas		1	11
	OG		10	
Chemistry	Daikin		1	8
	LG		4	
	Carrier	3		
K.M.H.Hostel	O. G		1	20
	LG		2	
	Voltas		1	
	Blue Star		6	
P.G Warden	Carrier		10	5
	O. G		3	
Computer Science	LG		2	21
	O. G		8	
	Voltas		7	
	Blue star Cassete		1	
	Vestar		2	
A.C. Auditorium	OG		20	35
	LG		1	

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

	Voltas		2	
	Blue Star		5	
	Blue Star Cassete		1	
	Daikin cassette		6	
Hussain din Hall	LG		7	7
English	LG		3	3
History	LG		2	3
	Daikin		1	
Tamil	LG		2	2
FT	LG		2	5
	Blue star		3	
PD	LG		2	2
Arabic	LG		1	2
	Voltas		1	
College Office	LG		9	9
Management Office	LG		1	1
Purchase	Voltas		1	1
Economics	LG		6	7
	Onida		1	
Hindi	LG		1	1
Maths	LG		3	6
	Voltas		1	
	Godrej		2	
Nutrition	Samsung		1	2
	Voltas		1	
JMC IAS Academy	Blue star		2	2
English S.F	Voltas		3	3
Students Counselling Centre	O.G		1	1
N.M.K Auditorium	Amtrex(Ductablesplit)		2	12
	Daikin Cassette		1	
	L.G		2	
	Daikin		2	
Doctor's Room	Voltas		1	1
U.G.C			1	1
Nodal office			1	1
Director office			1	1

Lighting Load

	Description	Numbers	Watts	Total watts	Lighting Load in Watts	LED Load in Watts
1	L.E.D. Tube Lights	1976	20	39520	39520	39520
2	Ordinary tube lights	1050	40	42000	42000	0
3	ceiling fan	2069	60	124140	0	0
4	wall mount fan	55	60	3300	0	0
5	exhaust fan	25	120	3000	0	0
6	1*1 LED ceiling fitting	258	14	3612	3612	3612
7	2*2 LED ceiling fitting	145	33	4785	4785	4785
8	C.F.L Bulb	40	11	440	440	
9	L.E.D Street Lights	85	20	1700	1700	1700
10	FOCUS LAMP (INDOOR AND OUTDOOR STADIUM)					
	(i) 400w Metal Aloyed	60	400	24000	24000	24000
	(ii) 250 w Metal Aloyed(indoor)	30	250	7500	7500	7500
	(iii) 250w Metal Aloyed(outdoor)	15	250	3750	3750	3750
11	L.E.D. Bulb	12	9	108	108	108
12	C.F.L 2*2 Fitting	22	72	1584	1584	
	Total				128999	84975

- Total Connected Load- 1012.91 KW
- Total Lighting Load- 129 KW
- LED lights-2476 numbers
- LED lighting load- 84.97 KW
- Lighting load on total load -12.73 %
- LED lighting load on total Lighting load -65.86%
- LED lighting load on total load-8.39 %

19. AUDIT FINDINGS & ENERGY SAVING POTENTIAL

19.1 Findings

- Annual electricity consumption from TNEB GRID is 11,04,486 units during the year 2021-2022.
- Electrical Energy consumption from Diesel Generator – 14,535 units.
- Solar Power Electrical energy consumption- 40,019 units
- Total Electrical Energy consumption from EB, DG and Solar – 11,59,040 units.
- LPG consumption -20.995 Kgs
- Diesel Consumption for transport -14,690 Litres
- Biogas generation- 15,300 M³
- Replacement of Conventional lights with Energy Efficient LED lights are done on phased manner
- Additional Solar power plant shall be planned in future for HT service.
- More Green energy utilisation shall be planned in the coming years
- Conduct more awareness programs on importance of energy saving for students and staff
- Remaining Conventional Tube lights shall be replaced with LED tube lights in a phased manner
- 5 Star rated Energy efficient electrical equipments shall be procured in future

19.2 Renewable Energy

- Solar power plant shall be planned in a phased manner in future to achieve 50 % renewable energy target
- 50 KW Solar Power plant is utilised to the maximum
- 1KW solar plant generates 1500 units per year, Avoids 0.79 KG CO₂ per unit,

Energy saving potentials

1. Conventional tube lights shall be replaced with LED tube lights

Conventional tube light (with electronic choke) energy consumption-40 watts/hr

LED Tube lights energy consumption-20 watts/ hr

Savings per tube light -20 watts/hr

No of hours usage per day in the hostel– 10 hrs

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

No of days hostel occupied with students-275 days

Energy savings per tube light per year - $275 \times 10 \times 20 = 55,000 \text{ wh} = 55 \text{ units}$

Average energy cost- Rs 8/unit

Cost saving per year per tube light- $55 \times 8 = \text{Rs } 440$

Cost savings per month-Rs 36.6

Approximate Cost of LED tube light -Rs 200

Payback period-5.5 months

Replacement cost for 100 LED tube lights-Rs $200 \times 100 = \text{RS } 20,000$

Cost savings for 100 LED tube lights-Rs 44,000 / year

Energy savings for 100 LED tube lights-5,500 units/ year

Payback period-5.5 months

2. Conventional fans shall be replaced with energy efficient fans

Conventional FAN energy consumption-75 watts/hr

ENERGY efficient fan energy consumption-28 watts/ hr

Savings per fan -47 watts/hr

No of hours usage per day in the hostel– 16 hrs

No of days hostel occupied with students-275 days

Energy savings per fan per year - $275 \times 16 \times 47 = 206,800 \text{ wh} = 207 \text{ units}$

Average energy cost- Rs 8 /unit

Cost saving per year per FAN- $207 \text{ units} \times 8 = \text{Rs } 1656$

Cost saving per month-Rs 138

Cost of ENERGY EFFICIENT FAN -Rs 2800

Payback period 20 months

Replacement cost for 100 Nos. ENERGY EFFICIENT FAN-Rs $2,800 \times 100 = \text{RS } 2,80,000$

Cost savings for 100 Nos. ENERGY EFFICIENT FAN -Rs 1,65,600 / year

Energy savings for 100 Nos. ENERGY EFFICIENT FAN -20,700 units/ year

Payback period 20 months

JAMAL MOHAMED COLLEGE (*Autonomous*)

COLLEGE WITH POTENTIAL FOR EXCELLENCE
Reaccredited (3rd Cycle) with 'A' Grade By NAAC
(Affiliated to Bharathidasan University)

TIRUCHIRAPPALLI – 620020
TAMILNADU, INDIA



ENERGY AUDIT REPORT 2020-2021



AUDIT / REPORT BY



ALCHEME GREEN ENERGY COMPANY

73977 64900

99948 45487

info@alchemegreenenergy.com

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

ACKNOWLEDGEMENT

We at ALCHEME GREEN ENERGY COMPANY, Madurai are thankful to the Principal for giving us the opportunity to carry out Energy audit of Jamal Mohamed College , Trichy -620 020, Tamilnadu, India. Alcheme Green Energy Company team is also thankful to all other supporting Officers / Staffs of the above institute for their wholehearted support, hospitality and the courtesy extended to the Audit team during the course of the visit.

The following officers from Alcheme Green Energy Company under the guidance of Mr. C. Jebaraj, B.Tech., have carried out the Energy Audit.

Name	Qualifications	Certification Number
Mr. C. Jebaraj	B.Tech., PDGEM., DIS., BEE Certificated Energy Auditor, IRCA Certified Lead Auditor - OHSMS Internal Auditor-QMS	EA-9847
Mr. S. Lakshmana Kumaran	B. Tech., MSc.,(Env. Science), MBA. Lead Auditor-Environment	-

The following staff from the Institution participated in the audit process

Name	Designation
Dr. T. Abdul Razak	Coordinator, IQAC
Dr. A. Jafar Ahamed	Associate Professor of Chemistry Core Member, IQAC
Dr.M. Syed Ali Padusha	Associate Professor of Chemistry Coordinator, Khajamian Hostel
Dr. B. Sirajudeen	Associate Professor of Tamil In-Charge, Campus Maintenance
Mr. M. Shaik Mohideen	Electrician – (Training Instructor- Sp. Gr.)

Summary of Audit

Energy audit of Jamal Mohamed College and Hostel was carried by Alcheme Green Energy Company. The Audit team has gone through the data related to TNEB GRID Electrical Energy, Renewable Energy , Diesel and LPG consumption. A study was also carried out on Renewable energy utilisation and Energy Conservation measures to reduce energy consumption.

During the visit it was observed that Jamal Mohamed College strictly follows reduce, reuse and recycle policy to limit energy usage. The concept of energy conservation is disseminated among the students and staffs through various seminars/workshops and training programs.

We hope that the results presented in the energy auditing report will serve as a guide for the institution on the existing energy related practices and resource usage.

Noteworthy

- **Solar Power Plant installed at Women's Hostel-50KW**
- **Solar Water Heater installed at Hostel -3000 LPD**
- **Biogas plant installed at hostel- 25 cubic meter- 3 Numbers**
- **Auto power cut off introduced in many water pumping system to SAVE WATER and ENERGY**
- **Tracking arrangement for UPS and Battery AMC**

The audit outputs and recommendations are summarised as follows

Due to corona, more number of on line classes were conducted and the energy consumption during the year 2020-2021 is very less compare to previous years

- Electrical Energy consumption from TNEB during the year 2020-2021 –5,69,555 units.
- Electrical Energy consumption from Diesel Generator – 3261 units.
- Solar Power Electrical energy consumption(Women's Hostel)- 8,750 units
- Total Electrical Energy consumption from EB,DG and Solar – 5,81,566 units.
- LPG consumption -6,194 Kgs
- Diesel Consumption for transport -1,162 Litres
- Biogas generation- 1,051 Kgs
- Lot of Energy conservation initiatives are taken.

- Due to Corona, Solar Power plant was not operated to its full capacity. In future, solar power plant to be utilised to the maximum possible way to consume more renewable energy
- Solar power plant shall be planned in future for HT service.
- More Renewable energy utilisation shall be planned in the coming years.

ENERGY SAVING POTENTIALS

1. Conventional tube lights shall be replaced with LED tube lights

Replacement cost for 100 LED tube lights-Rs 200x100= RS 20,000
Payback period-5.5 months
Cost savings for 100 LED tube lights-Rs 44,000 / year
Energy savings for 100 LED tube lights-5,500 units/ year

2. Conventional fans shall be replaced with energy efficient fans

Replacement cost for 100 Nos. ENERGY EFFICIENT FAN-Rs 2,800x100= RS 2,80,000
Cost savings for 100 Nos. ENERGY EFFICIENT FAN -Rs 1,65,600 / year
Energy savings for 100 Nos. ENERGY EFFICIENT FAN -20,700 units/ year
Payback period 20 months

- Remaining Conventional Tube lights shall be replaced with LED tube lights in a phased manner
- 5 Star rated Energy efficient electrical equipments shall be procured in future
- Power Factor of HT service to be monitored on daily basis and to be maintained above 0.9 value

We are happy to submit this detailed energy audit report to the Jamal Mohamed College



Alcheme Green Energy Company
Madurai

Sl. No.	Content	Page No.
	Summary of Audit	3
1	College TNEB HT Service connection Tariff, Load and Energy consumption details	6
2	College TNEB LT Service connection, Tariff, Load and Energy consumption details	7
3	Total TNEB Electrical energy consumption in the college	8
4	College TNEB LT service number wise energy consumption	9
5	TNEB Electrical Energy consumption in the Men's hostel with respect to each service	17
6	TNEB Electrical Energy consumption in the Women's hostel	18
7	DG set Electrical Energy consumption	19
8	Total Conventional Electrical Energy Consumption	21
9	Renewable Electrical Energy-Solar Electrical energy Consumption	22
10	Total Electrical Energy Consumption -Renewable and Conventional	23
11	Conventional Thermal Energy consumption - LPG	24
12	Conventional Thermal Energy consumption- Diesel	24
13	Renewable Thermal Energy-Solar Water Heater	25
14	Renewable Thermal Energy-Biogas	26
15	Total Energy consumption Electrical (Conventional & Renewable) and Thermal (Conventional & Renewable)	27
16	Renewable and Non Renewable (Conventional) energy distribution	28
17	Energy Conservation measures followed	29
18	Major Electrical load details	30
19	Common observation and feedback	35
20	Power Quality Analysis	36
21	Audit Findings and Energy saving potential	42

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

1. College TNEB HT Service connection Tariff, Connected Load and Energy consumption details for the year 2020-2021

TNEB HT SERVICE CONNECTION DETAILS	
Service Number	06 909 442 0210
Tariff	HT II B
Maximum Demand Permitted	250 KVA

Service no 06909440210														Total
Tariff HT IIB,		Permitted MD-250 KVA					Demand charges Rs 350/KVA							
	Rate Rs/ units	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	
Industrial consumption	6.35	4677	4089	4746	5325	6206	5259	7234	10254	13281	16516	26637	7755	111979
Peak Hr consumption	1.27	0	0	0	0	0	0	0	0	0	0	0	0	0
Night hr consumption	0.3175	0	0	0	0	0	0	0	0	0	0	0	0	0
Quarters consumption	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial consumption	8.05	506	231	306	550	445	405	320	329	379	582	560	0	4613
Temp supply consumption	12	909	728	540	768	675	930	1016	564	742	856	910	0	8638
Total units		6092	5048	5592	6643	7326	6594	8570	11147	14402	17954	28107	7755	125230
Total amount in Rs		140130	88557	200789	149980	146477	152905	172270	176831	189445	209248	276192	137312	2040136
overall unit cost in Rs		23.00	17.54	35.91	22.58	19.99	23.19	20.10	15.86	13.15	11.65	9.83	17.71	

HT Service Energy Consumption details for the year 2020-2021

HT Tariff II B- Consumption	111979	units
HT Commercial Consumption	4613	units
HT Temp Supply	8638	units
Total	125230	units

2.College TNEB LT Service connection Tariff, Connected Load and Energy consumption details for the year 2020-2021

TNEB LT SERVICE CONNECTION DETAILS				
Sl.No	SERVICE NO	Department	Tariff	connected load in KW
1	06 222 207 544	Computer	LM2B2/ LTCT	94.99
2	06 222 207 1131	MBA	LM2B2/ LTCT	82
3	06 222 207 509	Tamil	LM 2B1/ LT	48
4	06 222 207 13	General Library COE Office	LM 2B1/ LT	36
5	06 222 207 14	Maths	LM 2B1/ LT	48
6	06 222 207 15	Main Gate	LM 2B1/ LT	5.99
7	06 222 207 16	Principial Office	LM 2B1/ LT	40.08
8	06 222 207 17	Main Building	LM 2B1/ LT	48
	Total			403.06

TNEB ENERGY CONSUMPTION					
Sl. No	SERVICE NO	Tariff	Units Consumed	Bill Amount - Rs	Average Unit cost-Rs
1	06 222 207 544	LM2B2/ LTCT	63358	568337	8.97
2	06 222 207 1131	LM2B2/ LTCT	23560	245309	10.41
3	06 222 207 509	LM 2B1/ LT	16890	137151	8.12
4	06 222 207 13	LM 2B1/ LT	19340	143251	7.41
5	06 222 207 14	LM 2B1/ LT	24840	185055	7.45
6	06 222 207 15	LM 2B1/ LT	4070	29096	7.15
7	06 222 207 16	LM 2B1/ LT	34230	237048	6.93
8	06 222 207 17	LM 2B1/ LT	51210	344574	6.73
	Total		237498	1889821	

Signature Not Verified

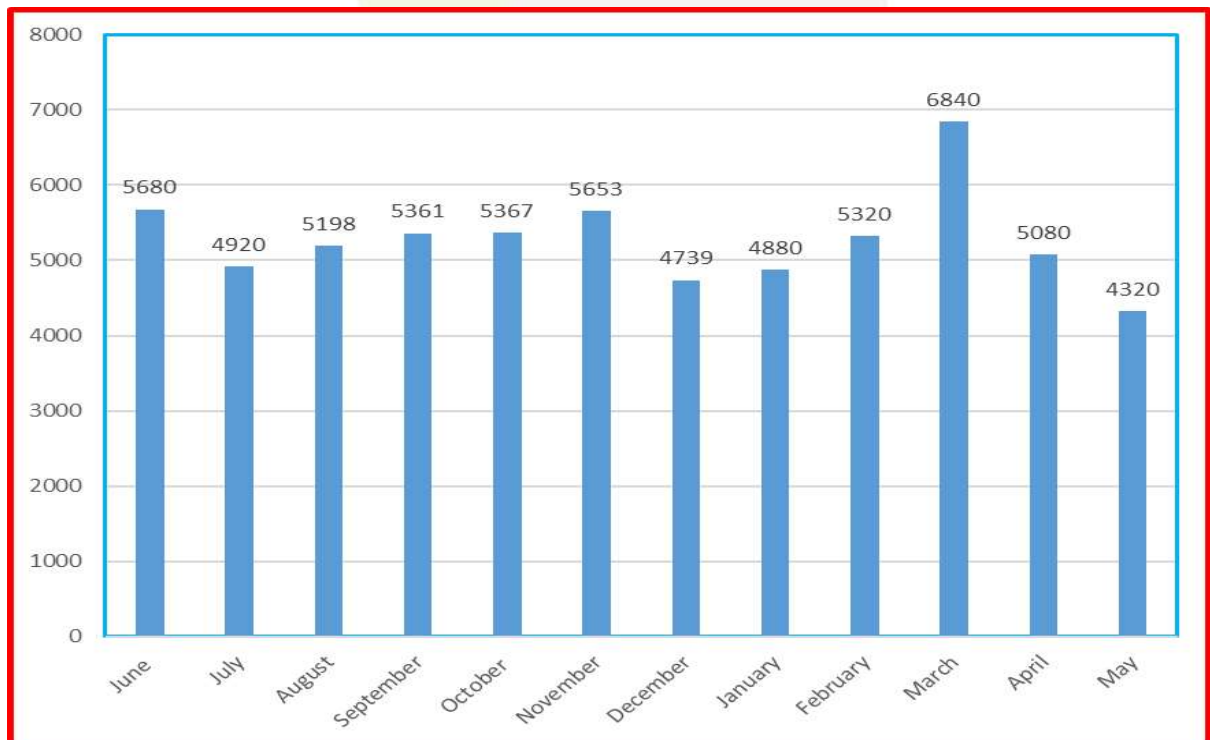
Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

3.Total TNEB Electrical Energy Consumption in the college

	HT Service	units
1	HT II B	111979
2	HT Commercial	4613
3	HT Temp	8638
	LT SERVICE	
1	LM 2B2- 2 Nos	86918
2	LM 2B1- 6 Nos	150580
	Total	362728

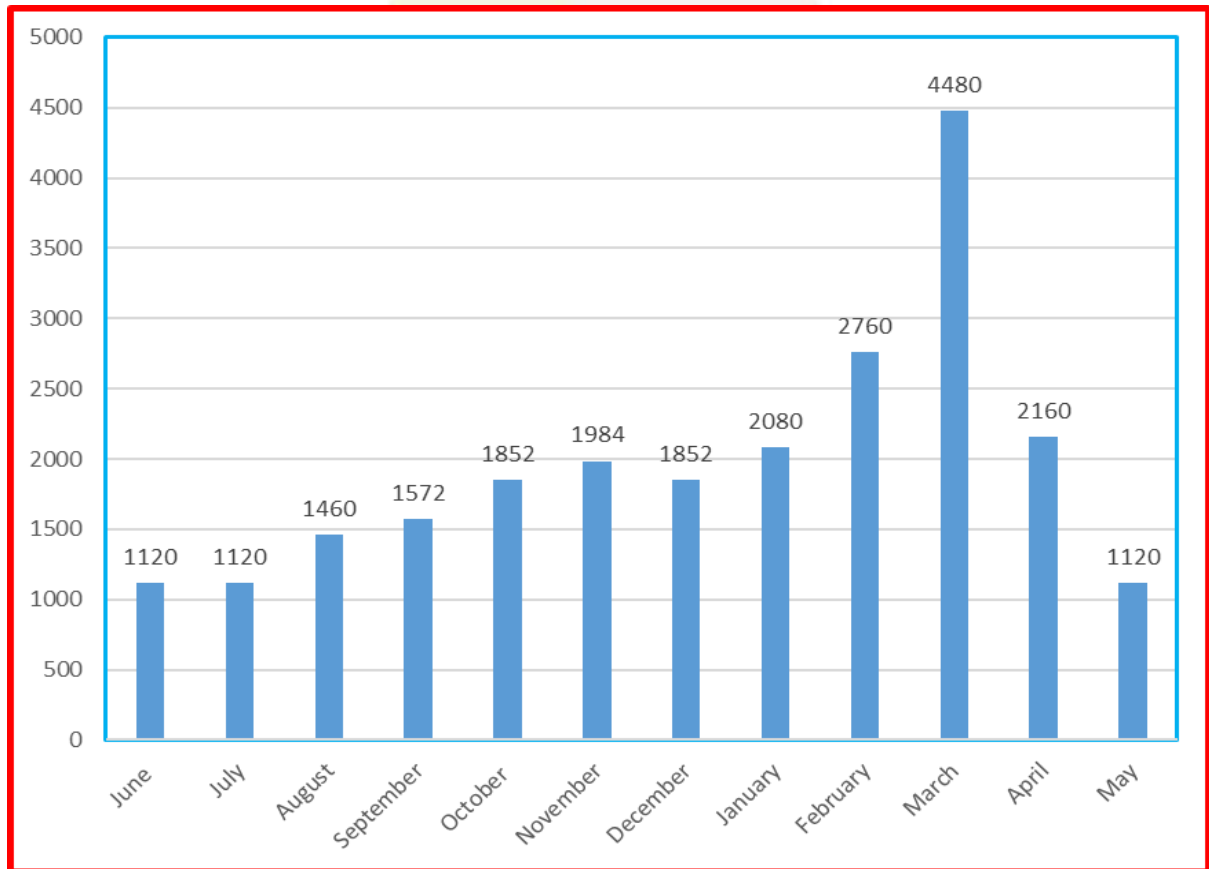
4.College TNEB LT service number wise energy consumption

1.Service No 06 222 207 544 94.99 KW 3 Phase Tariff LM2B2					
Sl. No.	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	29.06.2020	June	5680	50502	8.89
2	30.07.2020	July	4920	44517	9.05
3	31.08.2020	August	5198	46718	8.99
4	29.09.2020	September	5361	47979	8.95
5	31.10.2020	October	5367	48039	8.95
6	30.11.2020	November	5653	50303	8.90
7	31.12.2020	December	4739	43084	9.09
8	30.01.2021	January	4880	44211	9.06
9	27.02.2021	February	5320	47688	8.96
10	31.03.2021	March	6840	59721	8.73
11	30.04.2021	April	5080	45795	9.01
12	31.05.2021	May	4320	39780	9.21
	Total		63358	568337	8.97



Month wise Energy Consumption

2.Service No 06 222 207 1131 82 KW 3 Phase Tariff LM2B2					
Sl. No.	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	29.06.2020	June	1120	13782	12.31
2	30.07.2020	July	1120	13782	12.31
3	31.08.2020	August	1460	16469	11.28
4	30.09.2020	September	1572	17342	11.03
5	31.10.2020	October	1852	19547	10.55
6	30.11.2020	November	1984	20592	10.38
7	31.12.2020	December	1852	19562	10.56
8	30.01.2021	January	2080	21360	10.27
9	27.02.2021	February	2760	26757	9.69
10	31.03.2021	March	4480	40317	9.00
11	30.04.2021	April	2160	22023	10.20
12	31.05.2021	May	1120	13776	12.30
	Total		23560	245309	10.41

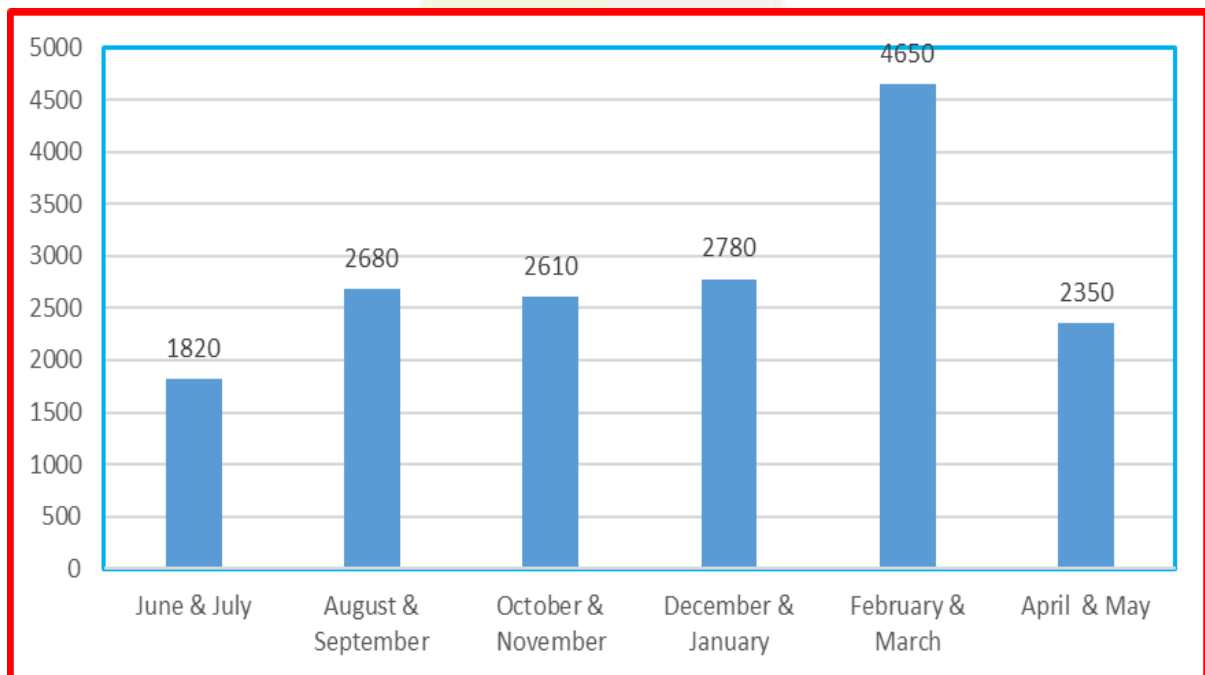


Month wise Energy Consumption

Signature Not Verified

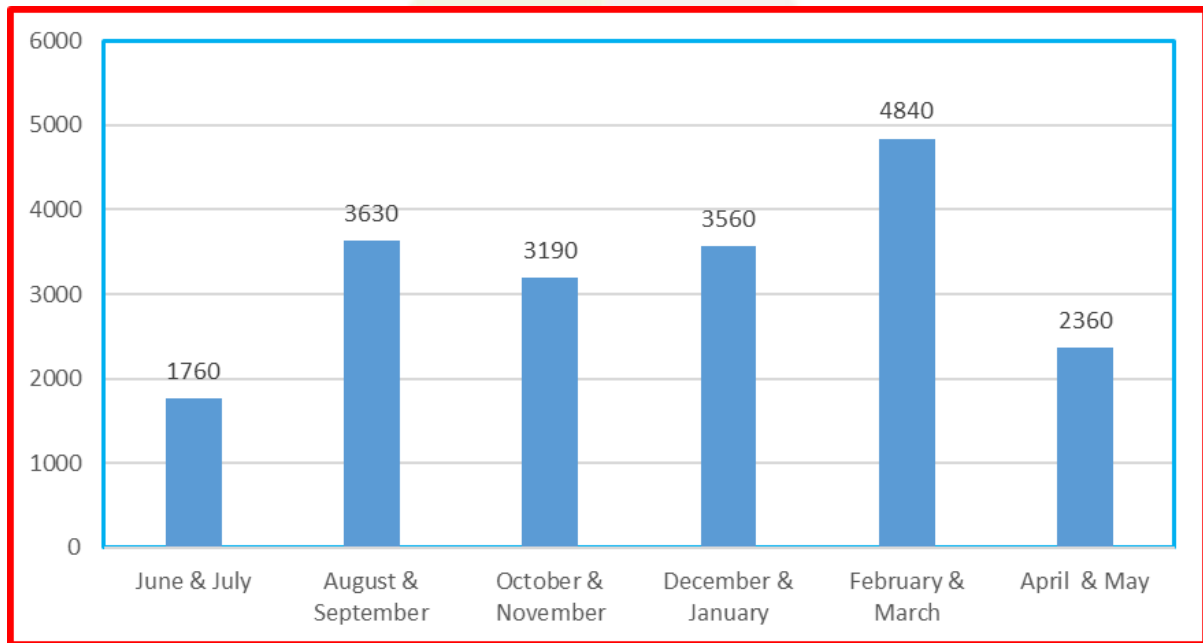
Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

3.Service No 06 222 207 509 48 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2020	June & July	1820	16802	9.23
2	27.10.2020	August & September	2680	22037	8.22
3	22.12.2020	October & November	2610	21632	8.29
4	24.02.2021	December & January	2780	22646	8.15
5	23.04.2021	February & March	4650	34014	7.31
6	22.06.2021	April & May	2350	20020	8.52
	Total		16890	137151	8.12



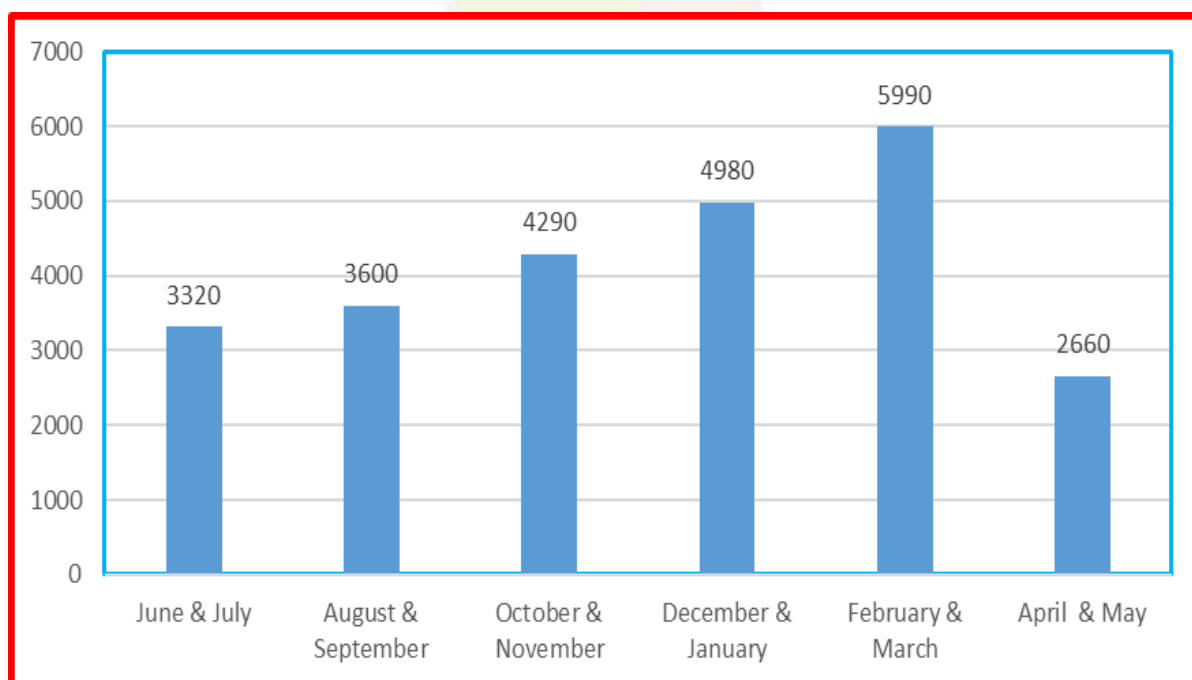
Bi Monthly Energy Consumption

4.Service No 06 222 207 13 36 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2020	June & July	1760	15024	8.54
2	27.10.2020	August & September	3630	26356	7.26
3	22.12.2020	October & November	3190	23652	7.41
4	24.02.2021	December & January	3560	25910	7.28
5	23.04.2021	February & March	4840	33668	6.96
6	22.06.2021	April & May	2360	18641	7.90
	Total		19340	143251	7.41



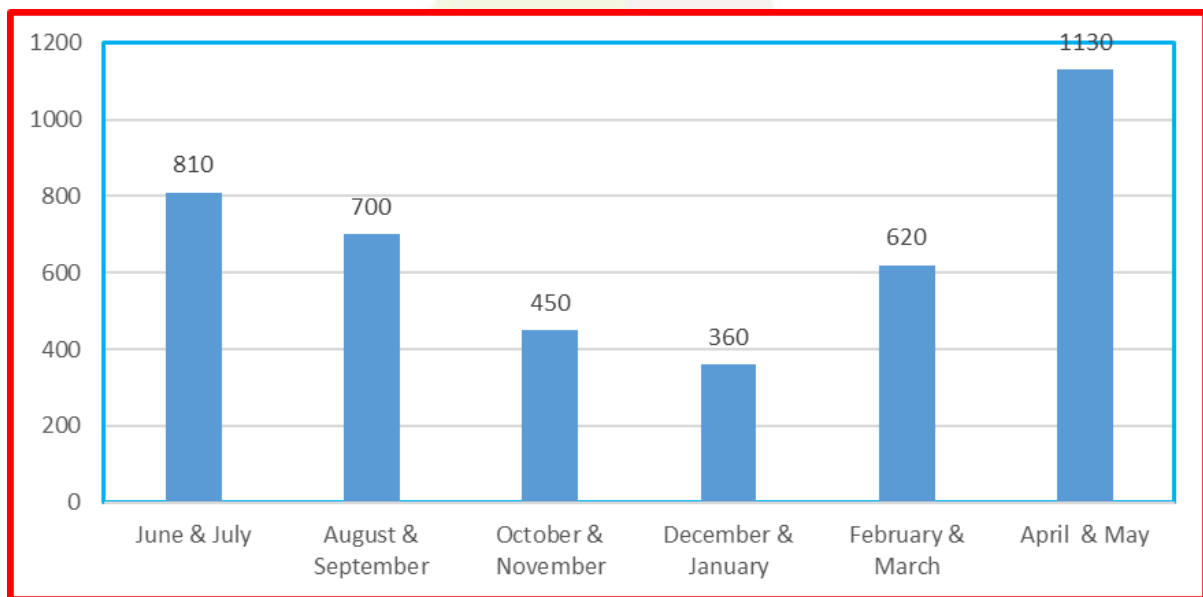
Bi Monthly Energy Consumption

5.Service No 06 222 207 14 48 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2020	June & July	3320	25877	7.79
2	27.10.2020	August & September	3600	27573	7.66
3	22.12.2020	October & November	4290	31733	7.40
4	24.02.2021	December & January	4980	35929	7.21
5	23.04.2021	February & March	5990	42069	7.02
6	22.06.2021	April & May	2660	21874	8.22
	Total		24840	185055	7.45



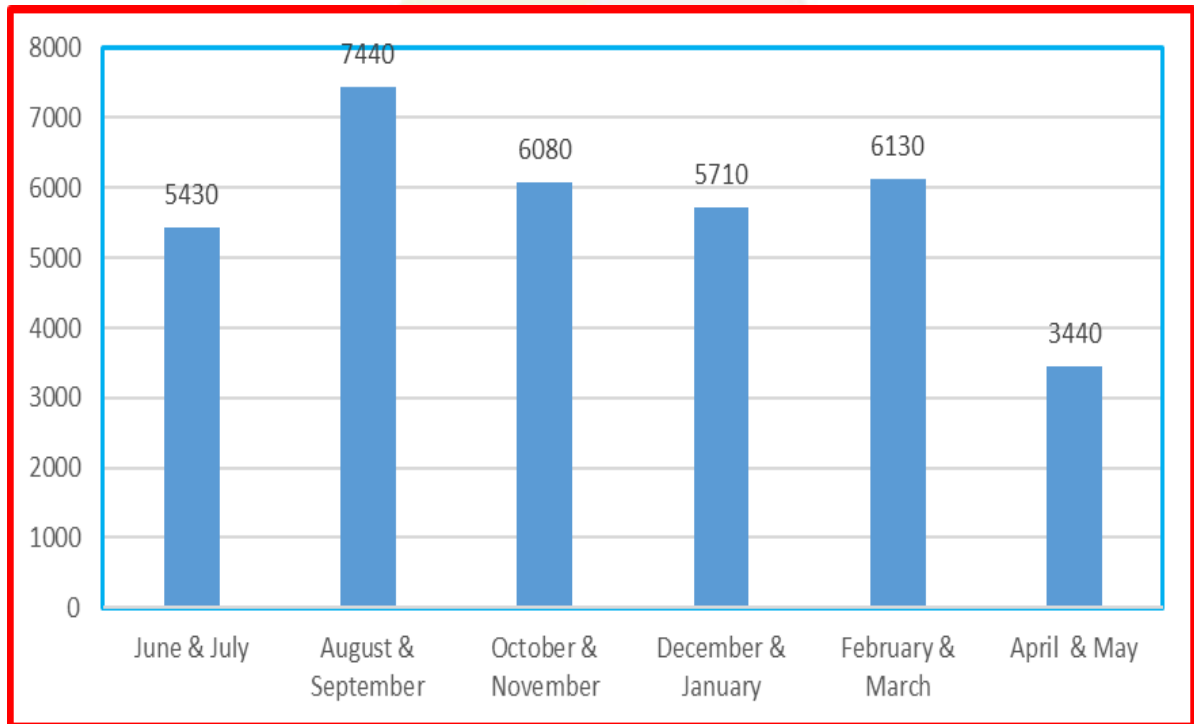
Bi Monthly Energy Consumption

6.Service No 06 222 207 15 5.99 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2020	June & July	810	5706	7.04
2	27.10.2020	August & September	700	4970	7.10
3	22.12.2020	October & November	450	3455	7.68
4	24.02.2021	December & January	360	2912	8.09
5	23.04.2021	February & March	620	4487	7.24
6	22.06.2021	April & May	1130	7566	6.70
	Total		4070	29096	7.15



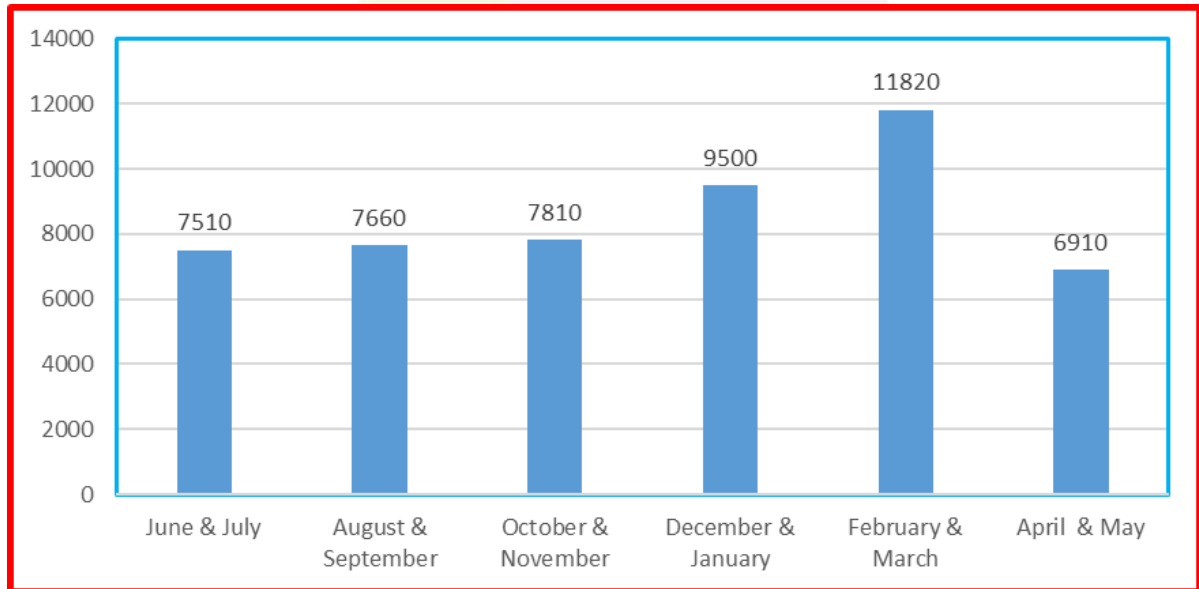
Bi Monthly Energy Consumption

7.Service No 06 222 207 16 40.08 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2020	June & July	5430	37866	6.97
2	27.10.2020	August & September	7440	49989	6.72
3	22.12.2020	October & November	6080	41760	6.87
4	24.02.2021	December & January	5710	39508	6.92
5	23.04.2021	February & March	6130	42098	6.87
6	22.06.2021	April & May	3440	25827	7.51
	Total		34230	237048	6.93



Bi Monthly Energy Consumption

8.Service No 06 222 207 17 48 KW 3 Phase Tariff LM 2B1					
Sl.No	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	24.08.2020	June & July	7510	51186	6.82
2	27.10.2020	August & September	7660	52157	6.81
3	22.12.2020	October & November	7810	53057	6.79
4	24.02.2021	December & January	9500	63278	6.66
5	23.04.2021	February & March	11820	77339	6.54
6	22.06.2021	April & May	6910	47557	6.88
	Total		51210	344574	6.73



Bi Monthly Energy Consumption

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

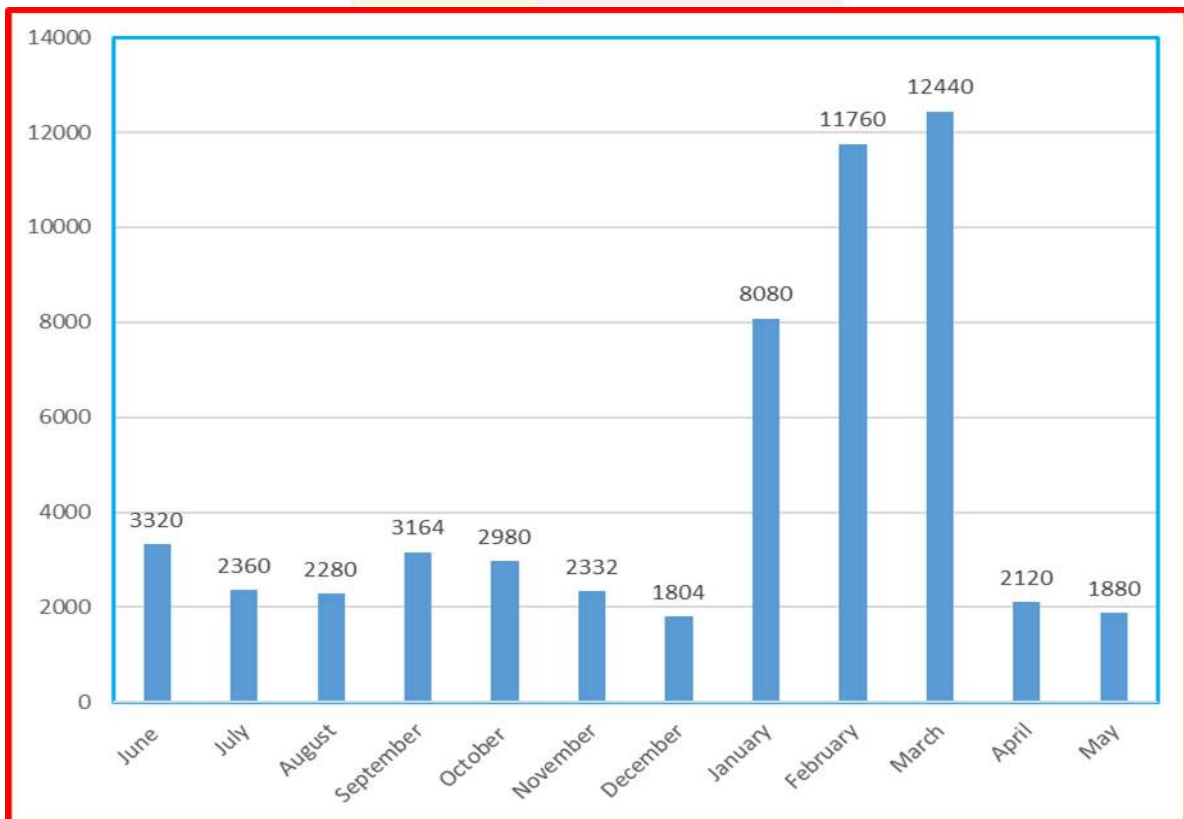
5. TNEB Electrical yearly energy consumption in the Men's hostel with respect to each service number

Sl.No	Service number	Tariff	Building	Energy consumption in units (KWH)	Load in KW
1	06 222 207 26	LM2B2	Quadrangle west	16280	15
2	06 222 207 27	LM2B2	Grinder Room	1960	13.73
3	06 222 207 28	LM2B2	Mess No-5	1670	4
4	06 222 207 29	LM2B2	Mess No-2	1570	3
5	06 222 207 30	LM61	Mess No-5	410	1.75
6	06 222 207 31	LM2B2	Mess No-3	2130	3
7	06 222 207 32	LM2B2	Mess No-5	2330	1.75
8	06 222 207 33	LM2B2	Office	17000	21
9	06 222 207 34	LM2B2	Quadrangle old building	13340	17
10	06 222 207 35	LM2B2	MBA, Drinking water	2620	27
11	06 222 207 36	LM2B2	Mess No-1	1770	5.6
12	06 222 207 37	LM2B2	Burunei Block	11390	12
13	06 222 207 38	LM2B2	Garden Bore well	6610	8
14	06 222 207 39	LM2B2	Drainage Motor	610	4.52
15	06 222 207 350	LM51	Tank Pump	3940	10
16	06 222 207 1046	LM2B2	Sulaiha Hostel	5430	12
17	06 222 207 1101	LM2B2	MH, Chennai alumni block	8870	17
18	06 222 207 1289	LM2B2	IDB & MI Block	35680	34
19	06 222 207 1519	LM61	Temporary service	110	10
20	06 222 207 1874	LM2B2	Auditorium AC (monthly)	9277	50
21	06 222 207 1875	LM 51	ATM Room (paid bank)	9310	4
	Total			152307	274.35

Service wise yearly energy consumption

6. TNEB Electrical Energy consumption in the Women's hostel

Service No 06 222 207 1045 85.5 KW 3 Phase Tariff LM2B2					
Sl. No.	Assessment Date	Months	Units Consumed	Bill Amount -Rs	Unit cost-Rs
1	29.06.2020	June	3320	31401	9.46
2	30.07.2020	July	2360	23778	10.08
3	31.08.2020	August	2280	23151	10.15
4	30.09.2020	September	3164	30122	9.52
5	31.10.2020	October	2980	28682	9.62
6	30.11.2020	November	2332	23558	10.10
7	31.12.2020	December	1804	19397	10.75
8	30.01.2021	January	8080	68907	8.53
9	27.02.2021	February	11760	97887	8.32
10	31.03.2021	March	12440	103239	8.30
11	30.04.2021	April	2120	21885	10.32
12	31.05.2021	May	1880	19998	10.64
	Total		54520	492005	9.02



Month wise Energy Consumption

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

7. DG set Electrical Energy consumption

Electrical Energy Consumption from DG sets-3261 units

DG sets in Aided Section

SI No	Block	Power Capacity
1	Main Gate	30 KVA
2	MBA	125 KVA
3	Controller of exam	63 KVA
4	Zoology, ARABIC	63 KVA
5	Maths, Economis	63 KVA
6	Principal Office, Aided office	63 KVA
7	Physics, Chemistry	63 KVA
8	Commerce, English	63 KVA
9	Computer science	125 KVA

DG sets in Self Finance Section

SI No	Block	Power Capacity
1	Information Technology	125 KVA
2	Fashion Technology	63 KVA
3	English, Maths, Tamil	63 KVA
4	Microbiology, Biotech	63 KVA
5	BBA, Physics	63 KVA
6	Auditorium, Commerce, Hotel Management	125 KVA

DG sets in women's Hostel

SI No	Block	Power Capacity
1	Dubai Block, Dubai Alumini Block	120 KVA
2	UGC Block , New mess	83 KVA

DG sets in Men's Hostel

Sl No	Block	Power Capacity
1	Mess 5	63 KVA
2	Mess 5	62.5 KVA
3	Motor room Near	62.5 KVA
4	Burunei Block Near	62.5 KVA
5	Sports Hostel	62.5 KVA



8.Total Conventional Electrical Energy Consumption details

	Electrical Energy Consumption - TNEB and DG	
	TNEB-College	units
1	HT service	125230
2	LT service	237498
	TNEB-Hostel	
1	Men's Hostel	152307
2	Women's Hostel	54520
	DG Set	
1	Both College and Hostel	3261
	Total	572816

9. Renewable Electrical Energy-Solar Electrical energy Consumption

Installed capacity -50KW

Energy Generation from installation-1,29,449 units

Energy Generation during the year 2020-2021-8750 units only

(Less utilisation due to more online classes because of Corona)



10.Total Electrical Energy Consumption -Renewable and conventional

	Total Electrical Energy Consumption - Renewable and conventional	
	TNEB-College	units
1	HT service	125230
2	LT service	237498
	TNEB-Hostel	
1	Men's Hostel	152307
2	Women's Hostel	54520
	DG Set	
1	Both College and Hostel	3261
	Solar	
	Hostel	8750
	Total	581566

11. Conventional Thermal Energy consumption - LPG

- LPG cylinders used- commercial cylinders of 19 kgs capacity
- Total LPG consumption during the year 2020-2021- 6194 Kgs

12. Conventional Thermal Energy consumption- Diesel

Diesel Consumption for transport during the year 2020-2021 – 1162 Litres



ALGEO

13.Renewable Thermal Energy-Solar Water Heater

Solar Water Heater installed-1000 LPD- one

500 LPD- Four

Total Capacity-3000 LPD



14. Renewable Thermal Energy- Biogas

Biogas plants installed- 25 M3 capacity X 2(Each one at Men & Women Hostel)

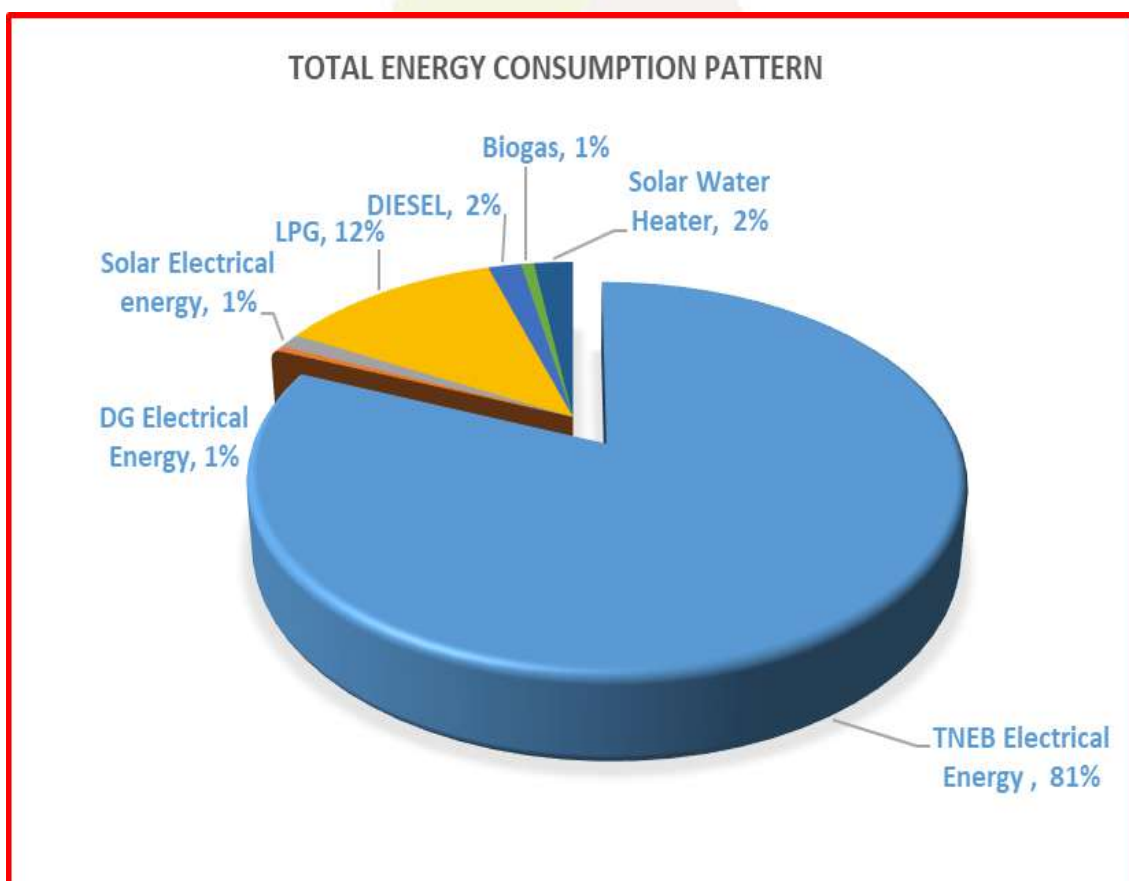
35 M3 capacity X 1(Men Hostel)



15.Total Energy consumption

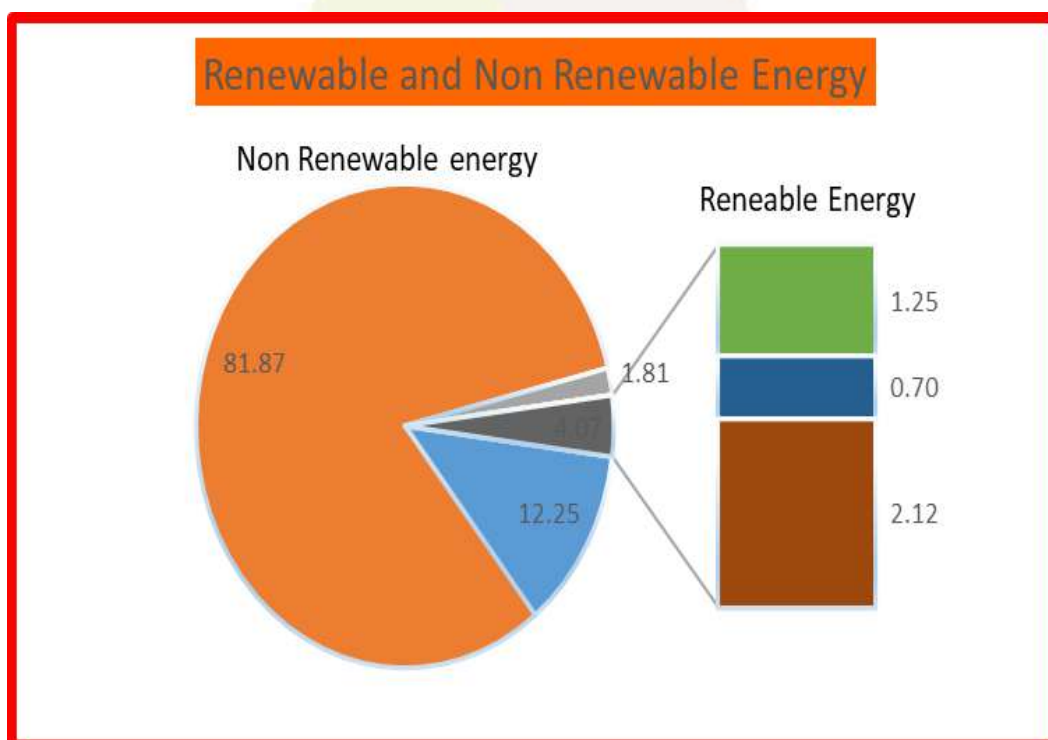
Electrical (Conventional & Renewable) and Thermal(Conventional & Renewable)

SL.NO	TYPE OF ENERGY	ENERGY -GCAL	Percentage
1	TNEB Electrical Energy	489.82	81.41
2	DG Electrical Energy	2.80	0.47
3	Solar Electrical energy	7.53	1.25
3	LPG	73.71	12.25
4	DIESEL	10.87	1.81
5	Biogas	4.20	0.70
6	Solar Water Heater	12.77	2.12
	Total	601.7	100.00



16. Renewable and Non Renewable(Conventional) energy distribution

ENERGY CONSUMPTION	PERCENTAGE	Total
NON RENEWABLE		
LPG	12.25	
TNEB AND DG ELECTRICAL ENERGY	81.87	
DIESEL	1.81	95.93
RENEWABLE		
SOLAR Electrical	1.25	
Biogas	0.70	
Solar Water Heater	2.12	4.07



17.The energy conservation measures followed

- Auto Level controller is provided in all water storage tanks to avoid overflow of water and to save energy.
- Replacing conventional electrical light fittings with energy efficient Light-Emitting Diode (LED) bulbs is going on as continuous process.
- Maximum utilisation of day lights at the hostels and college.
- Staff and Students are made aware of using public transport and college buses and individual vehicle usage is being reduced.
- Periodical maintenance and overhauling of generators is being carried out.
- Periodical maintenance of UPS and Battery systems are carried out.
- The fans, lights, air-conditioners and other electronic and electrical equipments are switched off when not in use.
- Computers are switched to sleep mode or hibernate mode automatically when not in use.
- At the end of every practical session, Computer monitors and UPS are switched off.
- Soft copies are maintained instead of hard copies, to reduce power consumption and paper.
- Work supervisor and electrician regularly check the usage of lights, fans and all other energy sources during and out of the college hours.
- Lights and fans are switched off by the students whenever they are out of hostel rooms

18.Major Electrical loads

UPS load details

JAMAL MOHAMED COLLEGE (AIDED)

Sl.No	DEPARTMENT	CAPACITY & VDC	MAKE	TYPE	FLOOR/ PLACE
1	LIBRARY (JMC)	3KVA/96VDC	NEMERIC	DIG	GROUND FLOOR
2	ATTENDANCE	2KVA/24VDC	KEVIN	DIG	GROUND FLOOR
3	SECURITY GATE	650VA/12VDC	ASSEMBLING	REG	GROUND FLOOR
4	AUM IBRAHIM BLOCK (C.S AIDED)	10KVA/360VDC	GLOBAL	REG	GROUND FLOOR
		1KVA/36VDC	CONSUL	DIG	GROUND FLOOR
5	DEAN OFFICE	850VA/12VDC	SUKAM	DIG	DEAN OFFICE
6	MATHEMATICS	10KVA/240VDC	CONSUL	DIG	1st FLOOR
7	SECRETARY SIR ROOM	2KVA/24VDC	KEVIN	REG	GROUND FLOOR
8	COLLEGE OFFICE	2KVA/96VDC	CONSUL	REG	GROUND FLOOR
9	COLLEGE OFFICE	6KVA/120VDC	RPC	REG	GROUND FLOOR
10	PRINCIPAL ROOM	1450VA/24VDC	ASSEMBLING	REG	GROUND FLOOR
11	ARABIC	6KVA/120VDC	GLOBAL	REG	1st FLOOR
12	ECONOMICS	1KVA/36VDC	NUMERIC	DIG	1st FLOOR
13	PHYSICS	2KVA/72VDC	ASSEMBLING	DIG	1ST FLOOR
14	CHEMISTRY	5KVA/120VDC	CONSUL	REG	GROUND FLOOR
15	WI FI & CCTV UPS	5KVA/48VDC	EXIDE	REG	1st FLOOR
16	ERP ROOM	5KVA/48VDC	EXIDE	REG	GROUND FLOOR
17	INTERCOM DEPT	1450VA/24VDC	KEVIN	REG	GROUND FLOOR
18	GUESTHOUSE	850VA/12VDC	ASSEMBLING	REG	1st FLOOR
19	UGC NODAL OFFICE	1450VA/24VDC	KEVIN	REG	1st FLOOR
20	CS DEPARTMENT	850VA/12VDC	KEVIN	REG	GROUND FLOOR
21	PRINCIPAL ROOM	2KVA/96VDC	CONSUL	DIG	GROUND FLOOR

(KHAJAMIAN HOSTEL)

S.No	DEPARTMENT	CAPACITY & VDC	MAKE	TYPE	FLOOR/ PLACE
1	KHAJAMIAN NET LAB				
2	KHAJAMIAN OFFICE	3KVA/36VDC	ASSEMBLING	REG	GROUND FLOOR
3	AUDITORIUM	3KVA/36VDC	ASSEMBLING	REG	GROUND FLOOR
4	1st MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
5	2nd MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
6	3rd MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
7	4th MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
8	5th MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR
9	6th MESS	650VA/12VDC	KEVIN	REG	GROUND FLOOR

**JAMAL MOHAMED COLLEGE UPS DETAILS
(SELF FINANCE)**

S.No	DEPARTMENT	CAPACITY & VDC	MAKE	TYPE	FLOOR/ PLACE
1	NEW MBA ALMANHAL BLOCK				
		850VA/12VDC	KEVIN	REG	FRONT OFFICE
2	MBA JEDDAH ALUMNI BLOCK	5KVA/120VDC	CONSUL	REG	1st FLOOR
		20KVA/360VDC	CONSUL	DIG	GROUND FLOOR
		2KVA/96VDC	CONSUL	DIG	2nd FLOOR
		5KVA/192VDC	CONSUL	REG	GROUND FLOOR
		1.5KVA/24VDC	KEVIN	REG	GROUND FLOOR
3	SELF FINANCE OFFICE (MEN)	2KVA/96VDC	NEMERIC	DIG	MEN S.F OFFICE
		1KVA/36VDC	NEMERIC	DIG	MEN S.F OFFICE
		2KVA/96VDC	NEMERIC	DIG	WOMEN COM LAB
		1KVA/36VDC	NEMERIC	DIG	MEN S.F OFFICE
4	CONTROLLER OFFICE				
		6KVA/120VDC	GLOBAL	REG	1st FLOOR
5	IT DEPARTMENT	3KVA/96VDC	CONSUL	DIG	1 ST FLOOR
		1KVA/36VDC	NEMERIC	DIG	1st FLOOR
		5KVA/240VDC	NUMERIC	DIG	2nd FLOOR
6	STUDENT BROWSING CENTRE	5KVA/240VDC	CONSUL	DIG	1st FLOOR
7	MSW	1KVA/36VDC	NUMERIC	DIG	GROUND FLOOR
8	BIOTECH & MICRO BIOLOGY	1.5KVA/24VDC	KEVIN	REG	GROUND FLOOR
9	HUSAINUDEEN HALL	1450V A/24VDC	KEVIN	DIG	GROUND FLOOR
10	SF WOMEN OFFICE	1450VA/24VDC	KEVIN	REG	GROUND FLOOR
11	A/C AUDITORIUM	1450VA/24VDC	KEVIN	DIG	GROUND FLOOR
12	MANAGEMENT OFFICE	1KVA/36VDC	CONSUL	DIG	GROUND FLOOR
13	BIO INFORMATICS	1KVA/36VDC	CONSUL	DIG	1st FLOOR
14	POWER ROOM	850VA/12VDC	KEVIN	REG	GROUND FLOOR

(PG NEW HOSTEL)

S.No	DEPARTMENT	CAPACITY & VDC	MAKE	TYPE	FLOOR/ PLACE
1	PG OFFICE	1450VA/24VDC	ASSEMBLING	REG	GROUND FLOOR
2	OFFICE	1450VA/24VDC	KEVIN	REG	GROUND FLOOR
3	NEW MESS	1050VA/12VDC	KEVIN	REG	GROUND FLOOR
4	OLD MESS	850VA/12VDC	BASS	REG	GROUND FLOOR

AC Load details

DEPT	MAKE	MODEL		No of A.C.
		WINDOW	SPLIT	
Bio-technology	Voltas		4	14
	Voltas			
	O.G		10	
	O.G			
Microbiology	O.G	1	2	11
	O.G			
	Carrier	1		
	Bluestar		7	
Bio-informatics	Onida		4	4
Hotel Mgt	O.G	1		3
	Carrier	1		
	Voltas		1	
GCC	Voltas		4	5
	Daikin		1	
Guest House	Carrier		2	3
	Voltas		1	
Commerce	L.G.		10	14
	Carrier	4		
Zoology	O.G	2		9
	Voltas	1	2	
	LG		3	
	Blue star		1	
Physics	O.G	3		7
	Voltas		1	
	Carrier	2		
	LG		1	
Student Browsing	LG		5	5
I.T. Block	Godrej		12	44
	O.G		5	
	Blue Star		2	
	LG		25	
Principal Room	Carrier	2		6
	LG		1	
	OG		3	
V.P Room	Daikin		1	1
Secretary room	O.G		2	5

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

	Daikin		2	
	LG		1	
Conference hall	O.G		3	3
Botany Dept	L.G		3	7
	Voltas		2	
	Blue Star		2	
M.B.A	O.G		34	42
	Carrier	1		
	Onida		5	
	Voltas		1	
	LG		1	
Urdu CS Lab	L.G		2	2
COE	Carrier	2		17
	Samsung		1	
	LG		1	
	OG		2	
	Voltas		11	
New M.B.A	O.G		37	44
	Onida		1	
	Blue star		6	
Maintenance	O.G		1	1
Masjid	Voltas		1	11
	OG		10	
Chemistry	Daikin		1	8
	LG		4	
	Carrier	3		
K.M.H.Hostel	O.G		1	20
	LG		2	
	Voltas		1	
	Blue Star		6	
	Carrier		10	
P.G Warden	O.G		3	5
	LG		2	
Computer Science	O.G		8	21
	LG		3	
	Voltas		7	
	Blue star Cassete		1	
	Vestar		2	
A.C. Auditorium	OG		20	35
	LG		1	

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

	Voltas		2	
	Blue Star		5	
	Blue Star Cassete		1	
	Daikin cassette		6	
Hussainudin Hall	LG		7	7
English	LG		3	3
History	LG		2	3
	Daikin		1	
Tamil	LG		2	2
FT	LG		2	5
	Blue star		3	
PD	LG		2	2
Arabic	LG		1	2
	Voltas		1	
College Office	LG		9	9
Management Office	LG		1	1
Purchase	Voltas		1	1
Economics	LG		6	7
	Onida		1	
Hindi	LG		1	1
Maths	LG		3	6
	Voltas		1	
	Godrej		2	
Nutrition	Samsung		1	2
	Voltas		1	
JMC IAS Academy	Blue star		2	2
English S.F	Voltas		3	3
Students Counseling Centre	O.G		1	1
N.M.K Auditoriam	Amtrex(Ductablesplit)		2	12
	Daikin Cassette		1	
	L.G		2	
	Daikin		2	
Doctor`s Room	Voltas		1	1
U.G.C			1	1
Nodal office			1	1
Director office			1	1

Lighting Load

- Total Connected Load- 1012.91 KW
- Total Lighting Load- 118 KW
- LED lights-1048 numbers
- LED power- 20watts
- LED lighting load- 20.96 KW
- Lighting load on total load -11.65 %
- LED lighting load on total Lighting load -17.76%
- LED lighting load on total load-2.07 %

19.COMMON OBSERVATION AND FEEDBACK

1. HT transformer area Fire Extinguishers are to be kept under weather protected cover and to be serviced
2. HT hand gloves to be maintained in a good condition
3. HT transformer area fencing to be painted
4. HT transformer area unwanted vegetation growth on earth pits and walkway area to be removed
5. Fire Extinguishers kept on college walls are easily accessible and operable
6. Fire Extinguishers kept in Hostel DG areas are to be relocated for easy access
7. Fire sand buckets to be kept in the hostel kitchen LPG storage area
8. LPG storage areas are well ventilated and neatly maintained. House -keeping is good
9. Hands on training to operate Fire Extinguishers shall be given to all teaching and non- teaching staffs on periodical manner
10. Lightning system is available inside the campus
11. Earthing system for Diesel Generator are fixed properly.
12. Women's Hostel DG sets earth pits to be maintained properly. Earth pits are covered by cement/ tiles
13. Unwanted materials to be removed from power room
14. Energy conservation program for all staffs shall be planned.
15. Display on Emergency contact numbers shall be posted on prominent places
16. Maintenance details are well maintained for all UPS and batteries.
17. Battery Purchase details, Warranty periods to be maintained.
18. Five star rated energy efficient appliances to be procured in the future

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

20. Power Quality Analysis

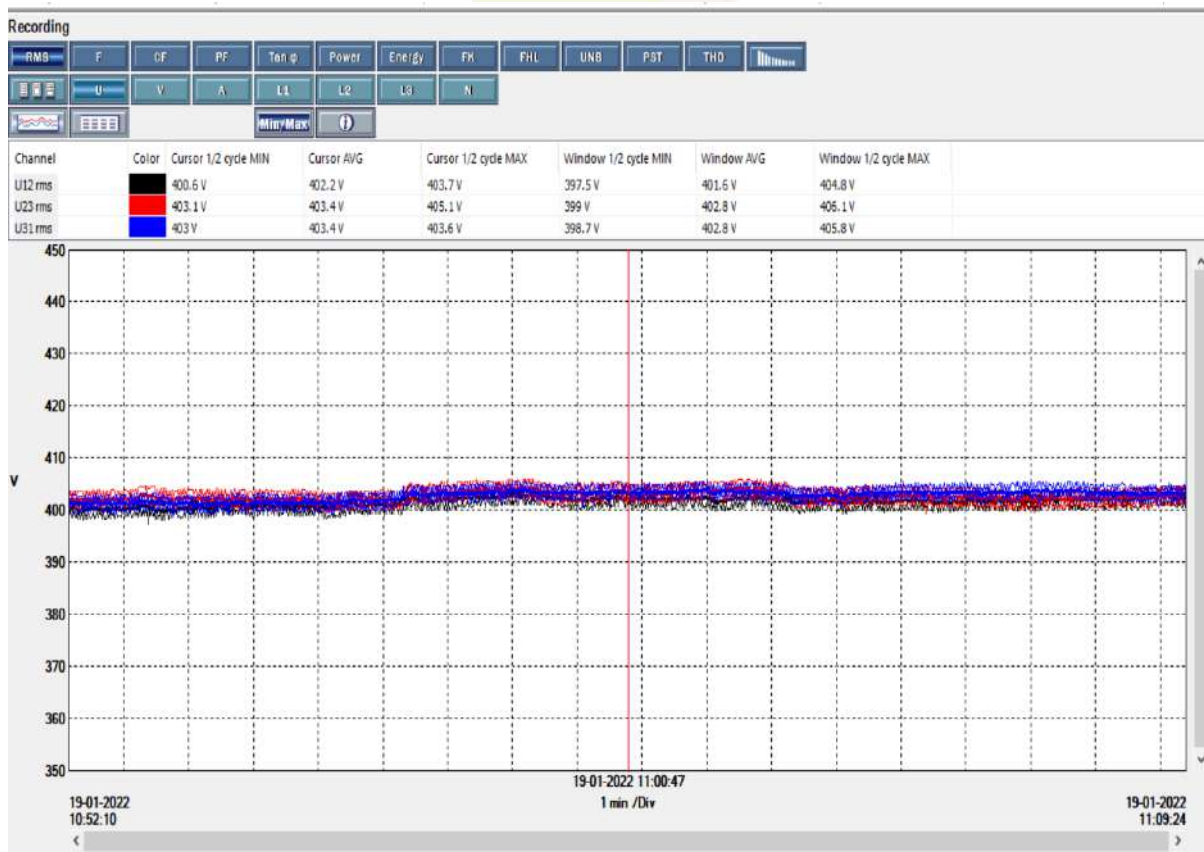
Main Incomer HT Service 06 909 442 0210

HT Service, Tariff IIB , Permitted MD 250KVA

Measurement taken at 77 % load

20.1. Phase to Phase Voltage Readings:

RY	YB	BR
401.6V	402.8V	402.8V

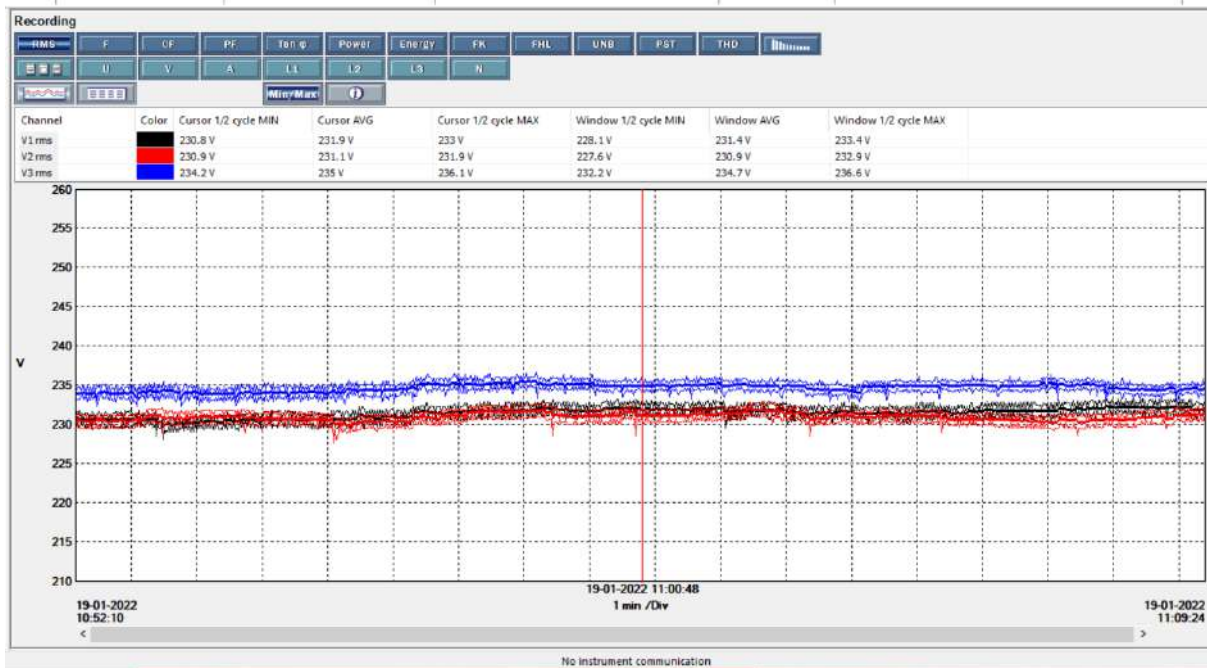


Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

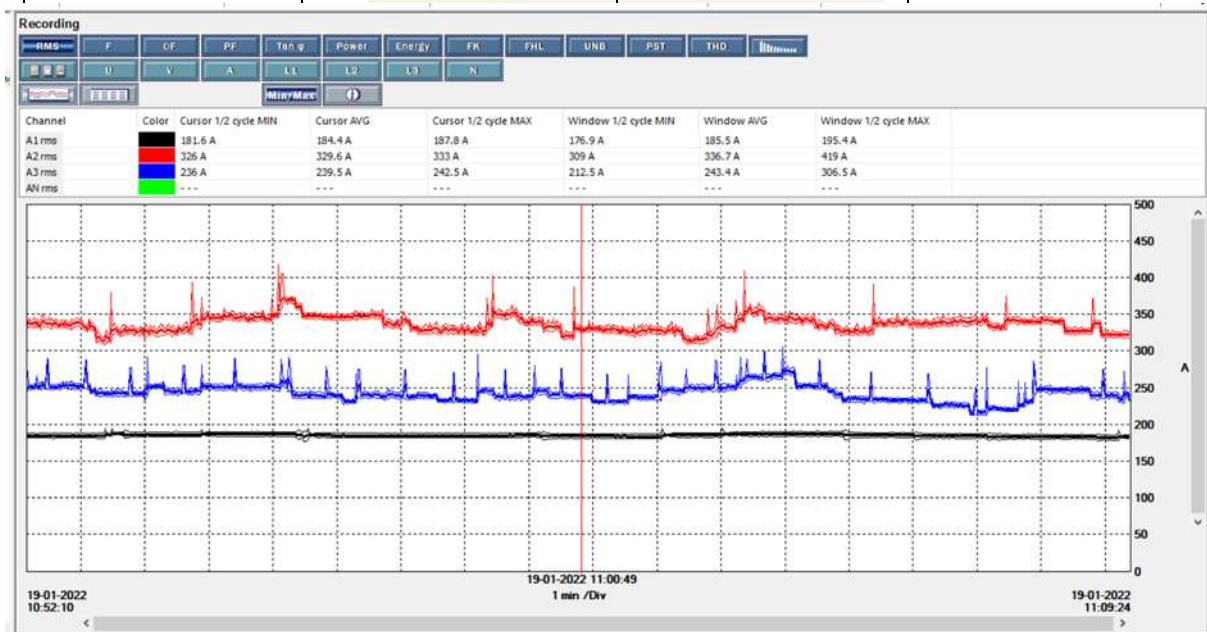
20.2. Phase to Neutral Voltage Readings:

R-N	Y-N	B-N
231.4V	230.9 V	234.7 V



20.3. Current Readings:

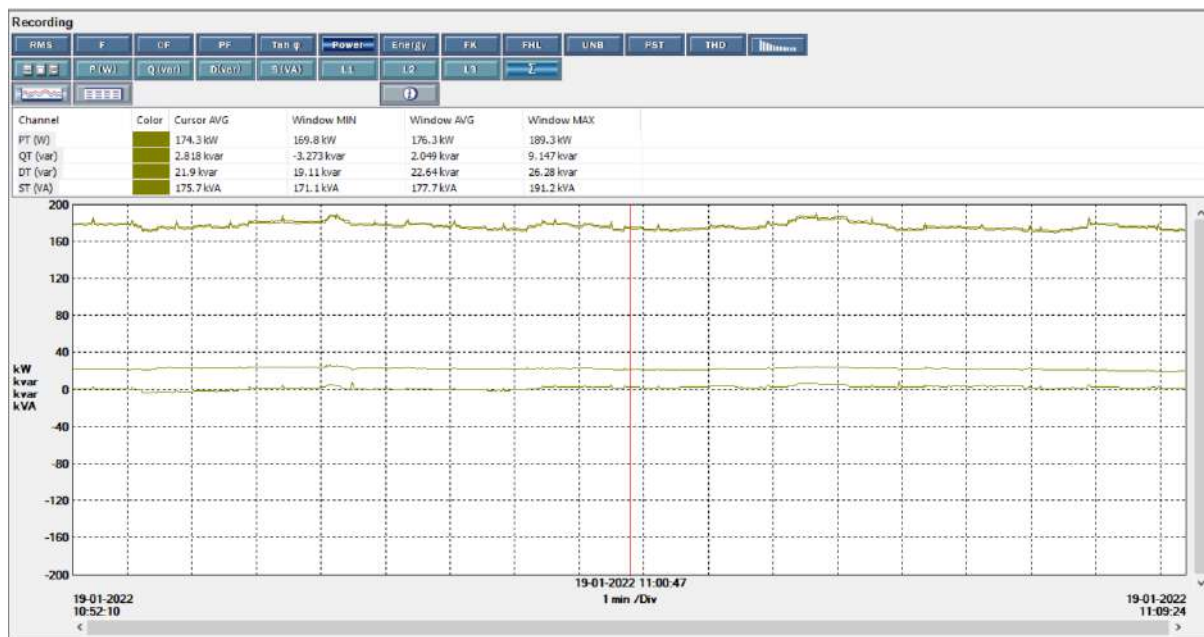
R	Y	B
176.9 A	309A	212.2 A



Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

20.4. Total Power (KW):



Maximum Power Reached is 189.3KW

20.5. Power Factor:

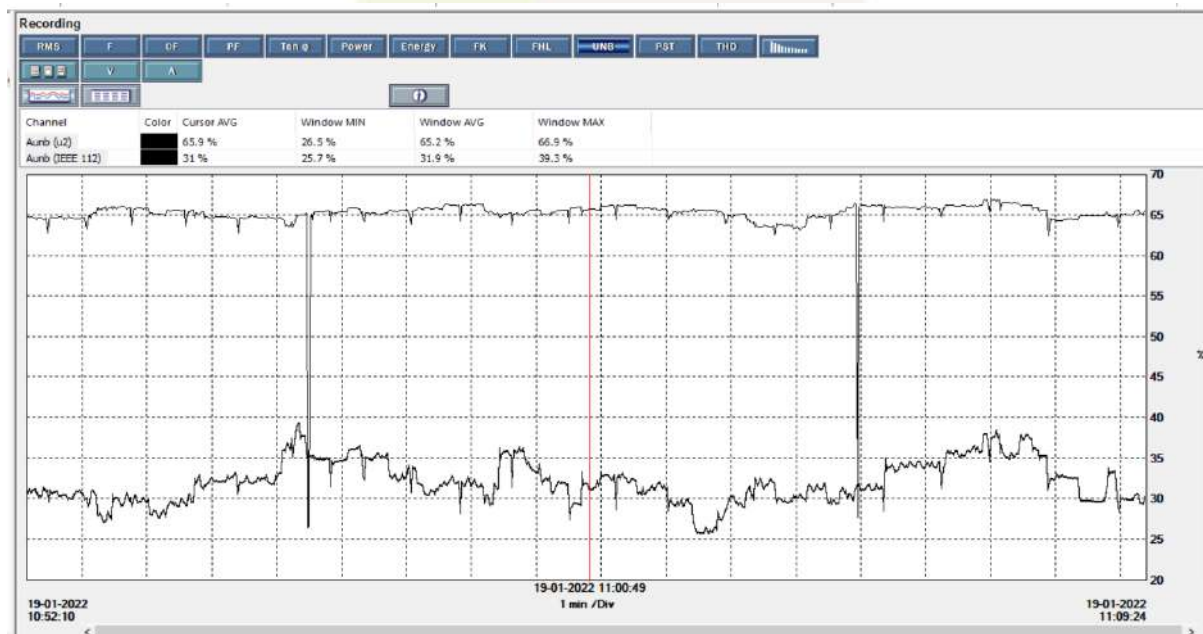


Power factor is 0.909- 0.994 is maintained

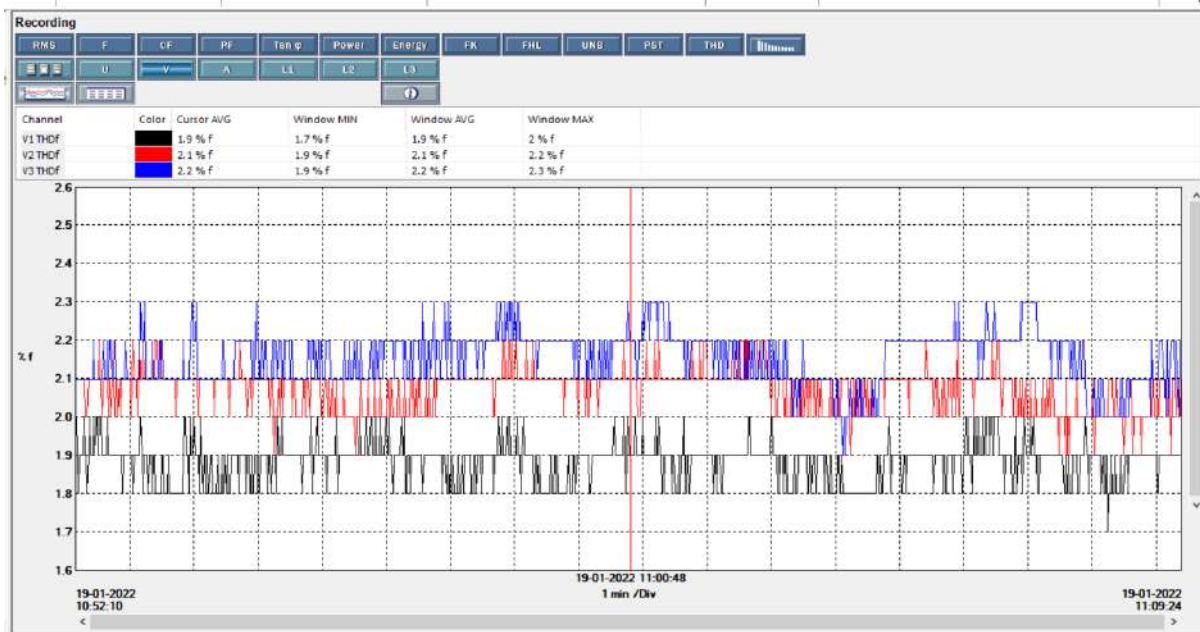
20.6.Voltage unbalance



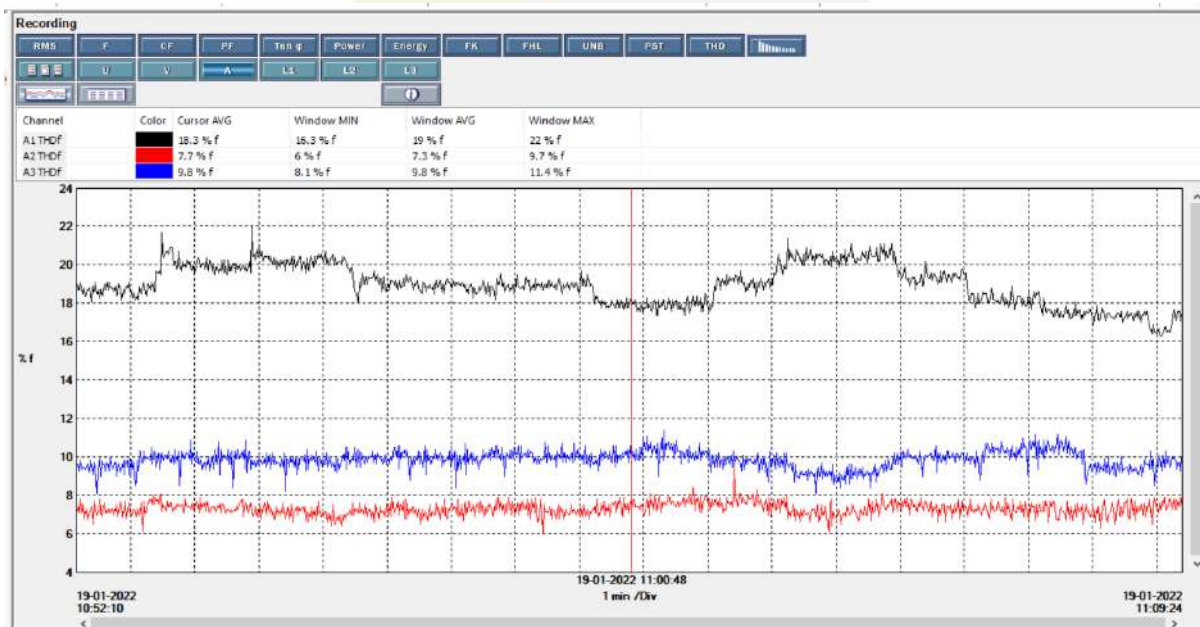
20.7 Current Unbalance



20.8 Voltage -Total Harmonics Distortion

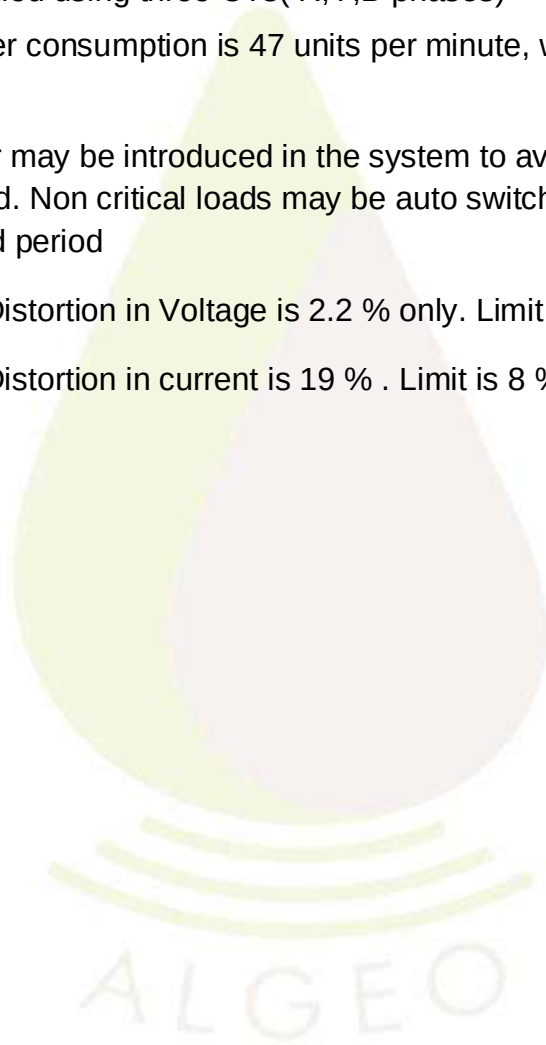


20.9 Current- Total Harmonics Distortion



20.10. Remarks & Recommendations on Power Quality

1. Voltage is balanced in three phases. Unbalance is 1%, Limit is 3%
2. Current unbalance is 31.9 % . Limit is 10%, Possibilities of Load sharing to be studied
3. Power Factor(PF) is maintained above 0.9. In the present system, Power Factor is controlled using single CT in R phase. To avoid Power factor penalty, PF is to be controlled using three CTs(R,Y,B phases)
4. At 77% load, power consumption is 47 units per minute, which is equal to 2820 units per hour
5. Demand controller may be introduced in the system to avoid penalty on Maximum Demand. Non critical loads may be auto switched off during the maximum demand period
6. Total Harmonics Distortion in Voltage is 2.2 % only. Limit is 4%
7. Total Harmonics Distortion in current is 19 % . Limit is 8 %



21. AUDIT FINDINGS & ENERGY SAVING POTENTIAL

21.1 Findings

- Annual electricity consumption from TNEB GRID is 569555 units during the year 2020-2021. **Energy consumption is less compare to previous years due to online classes**
- Electrical Energy consumption from Diesel Generator – 3261 units.
- Solar Power Electrical energy consumption (Women's Hostel)- 8,750 units
- Total Electrical Energy consumption from EB,DG and Solar – 5,81,566 units.
- LPG consumption -6,194 Kgs
- Diesel Consumption for transport -1,162 Litres
- Biogas generation- 1,051 Kgs
- Lot of Energy conservation initiatives are taken.
- Due to Corona, Solar Power plant was not operated to its full capacity. In future, solar power plant to be utilised to the maximum possible way to consume more renewable energy
- Additional Solar power plant shall be planned in future for HT service.
- More Renewable energy utilisation shall be planned in the coming years
- Conduct more awareness programs on importance of energy saving for students and staff
- Remaining Conventional Tube lights shall be replaced with LED tube lights in a phased manner
- 5 Star rated Energy efficient electrical equipments shall be procured in future
- Power Factor of HT service to be monitored on daily basis and to be maintained above 0.9 value
- May be shift over to Electric Buses (E- Vehicle) in a phased manner
- For transport buses, Part quantity of Bio Diesel shall be planned in future
- In total Lighting loads, 12.7 % lighting loads are converted into LED lighting system. Remaining Conventional Tube lights shall be replaced with LED tube lights in a phased manner

21.2 Renewable Energy

- Minimum energy consumption during Lockdown period was around 4500 units per month in HT service.
- Average energy consumption during normal days are around 30,000 units per month in HT service
- Solar power plant shall be planned in a phased manner in future to achieve 50 % renewable energy target
- Solar Power plant (50KW) available at Women's Hostel to be utilised to the maximum possible level
- 1KW solar plant generates 1500 units per year, Avoids 0.7 KG CO₂ per unit,
- 1KW solar plant 's generation energy per year is equal to 50 Grown up trees ' CO₂ absorption per year

Lighting Load

- LED lighting load on total Lighting load -17.76%

Energy saving potentials

1. Conventional tube lights shall be replaced with LED tube lights

Conventional tube light (with electronic choke) energy consumption-40 watts/hr

LED Tube lights energy consumption-20 watts/ hr

Savings per tube light -20 watts/hr

No of hours usage per day in the hostel– 10 hrs

No of days hostel occupied with students-275 days(During normal Days)

Energy savings per tube light per year -275 x10x20= 55,000wh=55 units

Average energy cost- Rs 8/unit

Cost saving per year per tube light-55 x 8 = Rs 440

Cost savings per month-Rs 36.6

Approximate Cost of LED tube light -Rs 200

Payback period-5.5 months

Replacement cost for 100 LED tube lights-Rs 200x100= RS 20,000

Cost savings for 100 LED tube lights-Rs 44,000 / year

Energy savings for 100 LED tube lights-5,500 units/ year

Payback period-5.5 months

2. Conventional fans shall be replaced with energy efficient fans

Conventional FAN energy consumption-75 watts/hr

ENERGY efficient fan energy consumption-28 watts/ hr

Savings per fan -47 watts/hr

No of hours usage per day in the hostel– 16 hrs

No of days hostel occupied with students-275 days (During normal Days)

Energy savings per fan per year - $275 \times 16 \times 47 = 206,800 \text{ wh} = 207 \text{ units}$

Average energy cost- Rs 8 /unit

Cost saving per year per FAN- $207 \text{ units} \times 8 = \text{Rs } 1656$

Cost saving per month-Rs 138

Cost of ENERGY EFFICIENT FAN -Rs 2800

Payback period 20 months

Replacement cost for 100 Nos. ENERGY EFFICIENT FAN-Rs $2,800 \times 100 = \text{RS } 2,80,000$

Cost savings for 100 Nos. ENERGY EFFICIENT FAN -Rs $1,65,600 / \text{year}$

Energy savings for 100 Nos. ENERGY EFFICIENT FAN - $20,700 \text{ units/ year}$

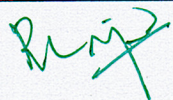
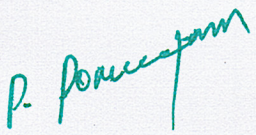
Payback period 20 months

GREEN AUDIT
at Jamal Mohamed College Campus for the year 2019 – 2020

The members of the Green Audit Committee inspected the premises of the College at 12.00 Noon on 14.12.2019. The following observations have been made with regard to the audit and a few suggestions were also given to make the campus more eco and user friendly.

Date: 14.12.2019

Members Present

S.No.	Name	Designation	Signature
1.	Dr. R. BABU RAJENDRAN	Professor, Dept.of Env. Biotechnology Bharathidasan University, Tiruchirappalli – 620 024	
2.	Dr. N. THAJUDDIN	Dean, Faculty of Science, Engineering and Technology and Professor, Dept. of Microbiology Bharathidasan University, Tiruchirappalli – 620 024 Mobile No : 9842379719	
3.	Mr. S.P. MOHAN	Founder President, Tamil Nadu Youth Exnora 5, Salai Road Ext., Thillai Nagar, Trichy-18 Mobile No: 9894487572	
4.	Mr. P. PONNUSEKARAN	Non Medical Supervisor, Dept. of Public Health & Preventive Medicine, Tiruverumbur Block, Trichy No.26, Cauvery Nagar North Extension Wireless Road, Airport Trichy- 620 007. Mobile No: 9791381082	

Previous Recommendation of the Green Audit Committee held on 08.12.2018, were implemented as detailed below:

1. The Expenditure incurred on green initiatives and waste management during the year 2016-2017 to 2018-2019 is given below:

The Expenditure incurred was	2016-2017	Rs. 4,97,783.00
	2017-2018	Rs.12,58,273.00
	2018-2019	Rs.11,30,605.00

2. Under renewable sources of energy such as Solar Lighting and LED facilities, the following details for utilization of funds from the years 2016-2017 to 2018-2019 are given below:

The fund utilized was	2016-2017	Rs. 1,79,628.00
	2017-2018	Rs. 3,48,833.00
	2018-2019	Rs. 1,19,530.00

During 2018-2019 50KW renewable energy is generated and used. Through LED bulbs 15KW (13%) lighting facility is used (from out of 118KW total lighting requirements)

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

3. Three Bio-gas plants are installed in the hostel campus for collecting all solid waste and generated gas is supplied to hostel mess for cooking purpose.
4. At present, 35 rain water harvesting tanks are installed in our College campus.
5. All the waste materials are collected and converted into fertilizer by compost pits.

Recommendations

1. Under Green initiative "No Vehicle day" may be observed in the College campus to ensure less pollution and to maintain eco-friendly atmosphere.
2. Through the use of LED bulbs more percentage of lighting facility can be increased to conserve energy.
3. Additional Rain Water Storage facility can be initiated.
4. Additional Solar Panel can be installed.
5. Electric power shut down for one hour may be observed in the campus.

[Signature]
14.12.2019

[Signature]
14.12.2019

P. Ponnasamy
14/12/19

[Signature]

Signature Not Verified

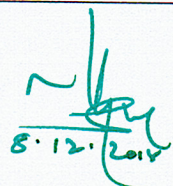
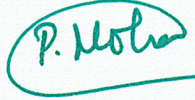
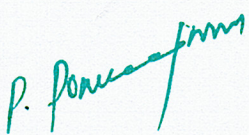
Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

GREEN AUDIT
at Jamal Mohamed College Campus for the year 2018 – 2019

The members of the Green Audit Committee inspected the premises of the College at 10.30 p.m. on 08.12.2018. The following observations have been made with regard to the audit and a few suggestions were also given to make the campus more eco and user friendly.

Date: 08.12.2018

Members Present

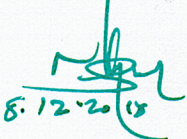
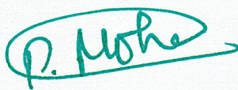
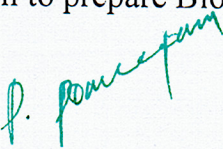
S.No.	Name	Designation	Signature
1.	Dr. R. BABU RAJENDRAN	Professor, Dept.of Env. Biotechnology Bharathidasan University, Tiruchirappalli – 620 024	
2.	Dr. N. THAJUDDIN	Dean, Faculty of Science, Engineering and Technology and Professor, Dept. of Microbiology Bharathidasan University, Tiruchirappalli – 620 024 Mobile No : 9842379719	 8.12.2018
3.	Mr. S.P. MOHAN	Founder President, Tamil Nadu Youth Exnora 5, Salai Road Ext., Thillai Nagar, Trichy-18 Mobile No: 9894487572	 08/12/18
4.	Mr. P. PONNUSEKARAN	Non Medical Supervisor, Dept. of Public Health & Preventive Medicine, Tiruverumbur Block, Trichy No.26, Cauvery Nagar North Extension Wireless Road, Airport Trichy- 620 007. Mobile No: 9791381082	

Previous Recommendation of the Green Audit Committee held on 15.12.2017, were implemented fully as detailed below:

- 1. Solar Energy panels were installed in the College campus.
- 2. Under the club activities, more than 10 special lectures were organized for creating awareness among students on Environmental issues to identify solutions.
- 3. Students of Science departments were motivated and involved in developing Bio-Fertilizer in our college campus and utilize in our coconut farm and vegetable garden in the campus.
- 4. The Swachh Bharat Abhiyan many activities were strengthened by making our students to participate in the cleanliness campaign.

Recommendations

- 1. Recommend to adopt a green initiative for a convenient day every year.
- 2. Recommend to collect the condensed water from all air conditioners and use it for Autoclaves, Distillation units etc.
- 3. Proposed to implement Modern Compost Bin to prepare Bio manure in the Hostels.


8.12.2018

Signature Not Verified

Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26

MANAGING COMMITTEE

कार्यकारी मंडळाचे

CODE : CSA 009 MEETING NO. / सभा नं

DATE / तारीख

RESOLUTION	PRESENT MEMBERS AND RESOLUTIONS	REMARKS
------------	---------------------------------	---------

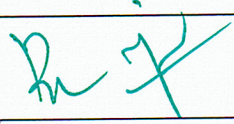
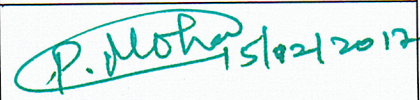
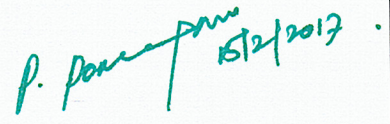
GREEN AUDIT

at Jamal Mohamed College Campus for the year 2017 – 2018

The members of the Green Audit Committee inspected the premises of the College at 01.45 p.m. on 15.12.2017. The following observations have been made with regard to the audit and a few suggestions were also given to make the campus more eco and user friendly.

Date: 15.12.2017

Members Present

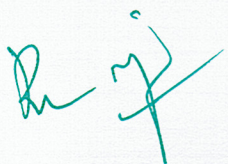
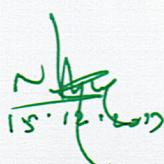
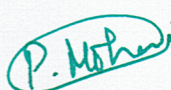
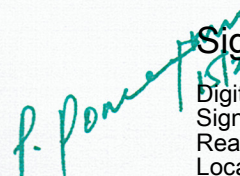
S.No.	Name	Designation	Signature
1.	Dr. R. BABU RAJENDRAN	Professor, Dept.of Env. Biotechnology Bharathidasan University, Tiruchirappalli – 620 024	
2.	Dr. N. THAJUDDIN	Dean, Faculty of Science, Engineering and Technology and Professor, Dept. of Microbiology Bharathidasan University, Tiruchirappalli – 620 024 Mobile No : 9842379719	
3.	Mr. S.P. MOHAN	Founder President, Tamil Nadu Youth Exnora 5, Salai Road Ext., Thillai Nagar, Trichy-18 Mobile No: 9894487572	
4.	Mr. P. PONNUSEKARAN	Non Medical Supervisor, Dept. of Public Health & Preventive Medicine, Tiruverumbur Block, Trichy No.26, Cauvery Nagar North Extension Wireless Road, Airport Trichy- 620 007. Mobile No: 9791381082	

Recommendations of 2016-17 were implemented partially / fully

- More awareness programmes have been organized on environmental issues.
- The service club members have been motivated to arrange for special rally on the dangers of Flood.
- Energy saving initiative programme have been organized for every class by way of switch on – off the lights and fans in the class rooms.
- The existing Waste water treatment plant is successfully running and recycled water is used for gardening. The biogas plant and solid waste management is also functioning well.

Recommendations

- Solar energy panels may be installed for green energy
- A few special lecture/ workshop can be arranged by various club students to create awareness on Environmental issues and their solution.
- Involve the students of Science discipline to develop bio-fertilizer, etc.
- Strengthen the activities of Swachh Bharat Abhiyan.

Signature Not Verified
Digitally Signed
Signed by: ISMAIL MOHIDEEN.S
Reason: NAAC
Location: Tamilnadu, India
Date: 16-May-2023 14:38:26