



14.0 ENERGY AUDIT

14.1 PRESENT ELECTRICAL ENERGY SYSTEM AND ELECTRICAL BILL ANALYSIS

The Campus receives electricity supply from TNEB through HT connections, details of the supply are as follows,

Source Of Power Supply	:	TNEB
Electric Power Supply is received from TANGEDCO	:	HT supply
Service number	:	09-909-400-0488
Sanctioned load	:	1000
Annual Electricity Consumption, kWh	:	2042634
Avg. Annual Power factor	:	0.94
Unit charges, INR/kWh	:	8.25

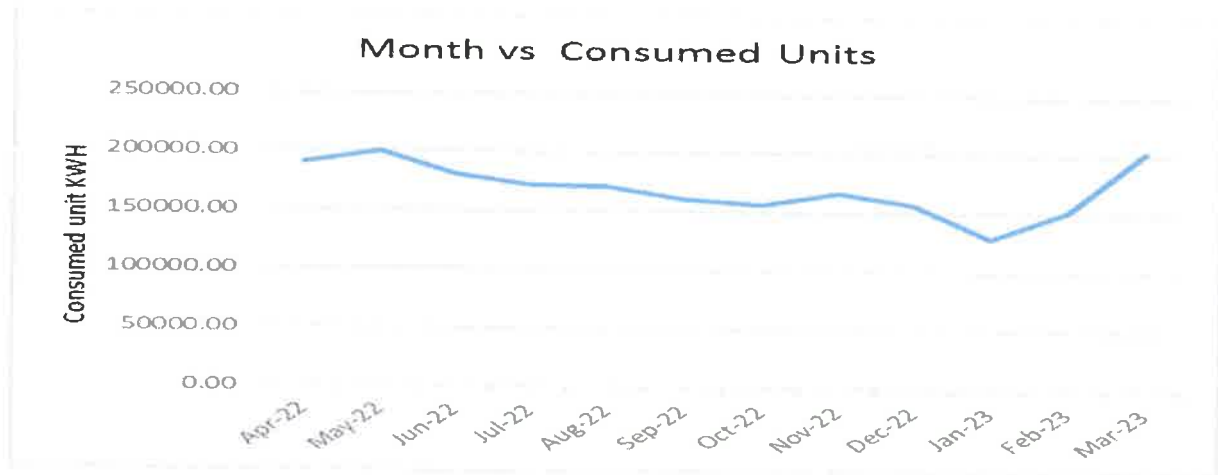
The one-year Electricity Bills for 2022-23 bill has been analysed and details as follows.

SERVICE NUMBER: 09-909-400-0488								
Month	Maximum Demand, kW	% of Demand utilization	Power Factor	Consumed Units, kWh	Fixed Charges, INR	Current Consumption Charges, INR	ETax, INR	Total bill, INR
Apr-22	808.00	80.80	0.93	190204.00	315000	1273804	77830	1588804
May-22	804.00	80.40	0.94	199964.00	315000	1341444	81142	1656444
Jun-22	744.00	74.40	0.94	181245.00	315000	1224242	74232	1539242
Jul-22	772.00	77.20	0.95	172388.00	315000	1174930	72256	1489930
Aug-22	712.00	71.20	0.94	171876.00	315000	1176258	71273	1491258
Sep-22	716.00	71.60	0.94	160855.00	441000	1304439	83148	1745439
Oct-22	684.00	68.40	0.94	156697.00	495000	1329988	85925	1824988
Nov-22	668.00	66.80	0.95	167055.00	495000	1460693	92031	1955693
Dec-22	600.00	60.00	0.95	157690.00	495000	1301620	82206	1796620
Jan-23	563.00	56.30	0.94	129294.00	495000	1110127	71514	1605127
Feb-23	623.00	62.30	0.94	152309.00	495000	1268739	81154	1763739
Mar-23	754.00	75.40	0.94	203057.00	495000	1654205	104144	2149205

REMARKS:

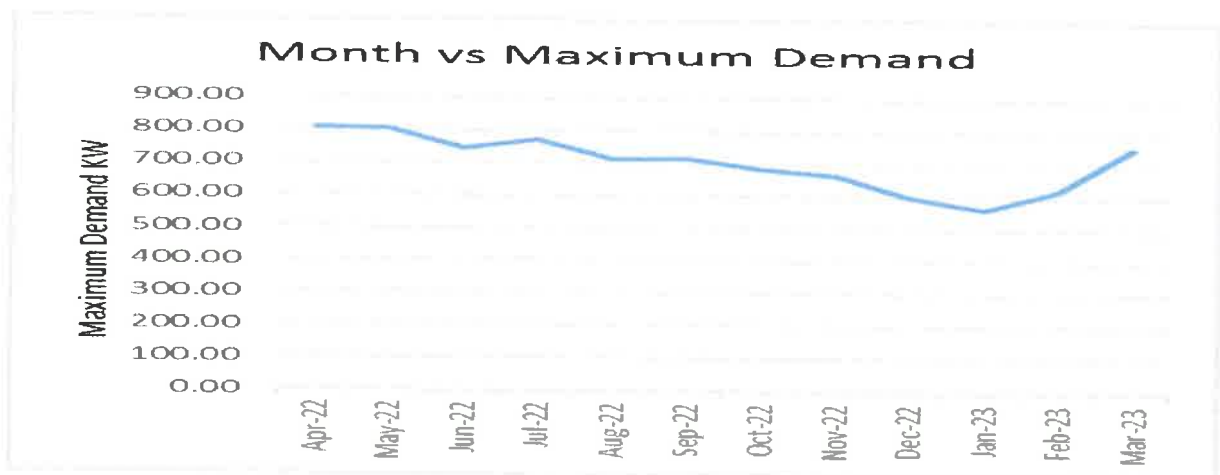
- The college has maintained the average power factor of 0.94, it is recommended to maintain the power factor close to unity.
- The college has maintained the average Demand utilisation of 80%.

The units, kWh consumed over the period of one year is shown below.



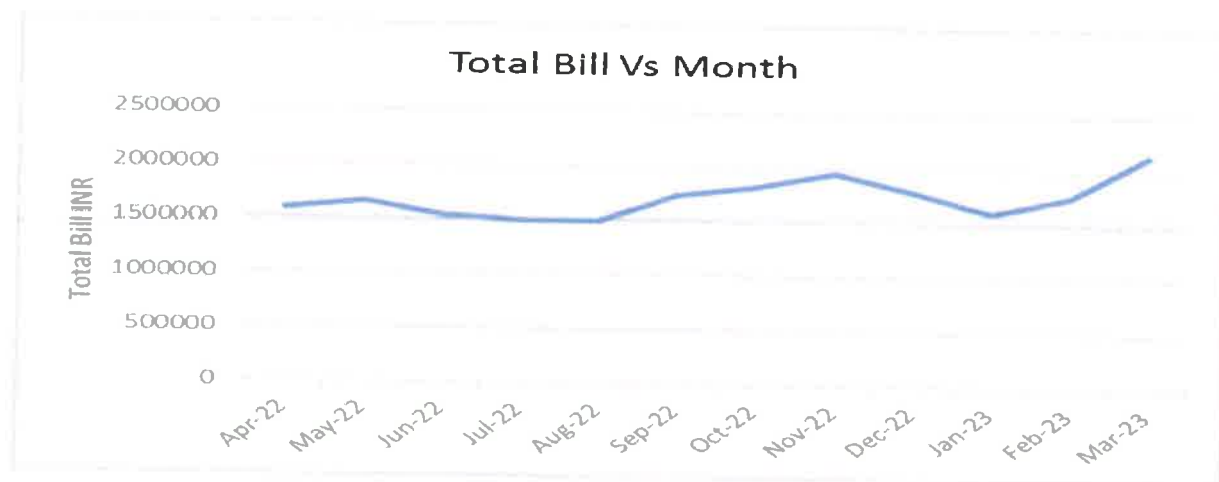
The maximum unit is consumed in the month of March 2023 and minimum unit is consumed in the month of January 2023.

The recorded demand over the period of one year is shown below.



The recorded demand is maximum in the month of April 2022 and minimum in the month of January 2023.

The bill details over the period of one year is shown below.



The maximum bill is paid in the month of March 2023 and minimum unit is consumed in the month of July 2022.

14.2 LIGHT DETAILS

The campus has use lights for illumination purposes. The lights detail as follows.

S. NO	NAME OF THE BLOCK	FLOOR	LOCATION	TYPE OF LIGHT	NO OF LIGHTS	TOTAL POWER, kW
1	A block	Ground	Sri Sairam Engineering College	Fluorescent Light	108	3.9
2	A block	First	Sri Sairam Engineering College	Fluorescent Light	111	4.0
3	A block	Second	Sri Sairam Engineering College	Fluorescent Light	71	2.6
4	B block	Ground	Sri Sairam Engineering College	Fluorescent Light	53	1.9
5	B block	First	Sri Sairam Engineering College	Fluorescent Light	54	1.9
6	B block	Second	Sri Sairam Engineering College	Fluorescent Light	66	2.4
7	C Block	Ground	Sri Sairam Engineering College	Fluorescent Light	117	4.2
8	C Block	First	Sri Sairam Engineering College	Fluorescent Light	55	2.0
9	C Block	Second	Sri Sairam Engineering College	Fluorescent Light	69	2.5
10	D Block	Ground	Sri Sairam Engineering College	Fluorescent Light	73	2.6
11	D Block	First	Sri Sairam Engineering College	Fluorescent Light	78	2.8
12	D Block	Second	Sri Sairam Engineering College	Fluorescent Light	35	1.3
13	D Block	Third	Sri Sairam Engineering College	Fluorescent Light	80	2.9
14	E Block	First	Sri Sairam Engineering College	Fluorescent Light	70	2.5
15	E Block	Second	Sri Sairam Engineering College	Fluorescent Light	69	2.5
16	E Block	Third	Sri Sairam Engineering College	Fluorescent Light	30	1.1
17	E Block	Forth	Sri Sairam Engineering College	Fluorescent Light	42	1.5
18	E Block	Fifth	Sri Sairam Engineering College	Fluorescent Light	40	1.4
19	F Block	Ground	Sri Sairam Engineering College	Fluorescent Light	74	2.7
20	F Block	First	Sri Sairam Engineering College	Fluorescent Light	123	4.4
21	F Block	Second	Sri Sairam Engineering College	Fluorescent Light	40	1.4
22	F Block	Third	Sri Sairam Engineering College	Fluorescent Light	87	3.1
23	F Block	Forth	Sri Sairam Engineering College	Fluorescent Light	64	2.3
24	F Block	Fifth	Sri Sairam Engineering College	Fluorescent Light	48	1.7
25	G Block	Ground	Sri Sairam Engineering College	Fluorescent Light	200	7.2
26	G Block	First	Sri Sairam Engineering College	Fluorescent Light	26	0.9
27	G Block	Second	Sri Sairam Engineering College	Fluorescent Light	26	0.9
28	G Block	Third	Sri Sairam Engineering College	Fluorescent Light	22	0.8
29	G Block	Forth	Sri Sairam Engineering College	Fluorescent Light	68	2.4
30	G Block	Fifth	Sri Sairam Engineering College	Fluorescent Light	25	0.9
31	H Block	First	Sri Sairam Engineering College	Fluorescent Light	1	0.0
32	H Block	Third	Sri Sairam Engineering College	Fluorescent Light	4	0.1
33	H Block	Fifth	Sri Sairam Engineering College	Fluorescent Light	15	0.5
34	I Block	Ground	Sri Sairam Engineering College	Fluorescent Light	45	1.6
35	I Block	First	Sri Sairam Engineering College	Fluorescent Light	33	1.2
36	I Block	Second	Sri Sairam Engineering College	Fluorescent Light	20	0.7
37	I Block	Third	Sri Sairam Engineering College	Fluorescent Light	20	0.7
38	J Block	Ground	Sri Sairam Engineering College	Fluorescent Light	46	1.7

S. NO	NAME OF THE BLOCK	FLOOR	LOCATION	TYPE OF LIGHT	NO OF LIGHTS	TOTAL POWER, kW
39	J Block	First	Sri Sairam Engineering College	Fluorescent Light	28	1.0
40	J Block	Second	Sri Sairam Engineering College	Fluorescent Light	20	0.7
41	J Block	Third	Sri Sairam Engineering College	Fluorescent Light	12	0.4
42	K Block	Ground	Sri Sairam Engineering College	Fluorescent Light	46	1.7
43	K Block	Third	Sri Sairam Engineering College	Fluorescent Light	16	0.6
44	L Block	Ground	Sri Sairam Engineering College	Fluorescent Light	37	1.3
45	L Block	First	Sri Sairam Engineering College	Fluorescent Light	29	1.0
46	L Block	Third	Sri Sairam Engineering College	Fluorescent Light	16	0.6
47	M Block	Ground	Sri Sairam Engineering College	Fluorescent Light	40	1.4
48	M Block	First	Sri Sairam Engineering College	Fluorescent Light	38	1.4
49	M Block	Second	Sri Sairam Engineering College	Fluorescent Light	12	0.4
50	M Block	Third	Sri Sairam Engineering College	Fluorescent Light	38	1.4
51	Boys Hostel A		Sri Sairam Engineering College	Fluorescent Light	181	6.5
52	Boys Hostel B		Sri Sairam Engineering College	Fluorescent Light	227	8.2
53	A Block	Ground	Sri Sairam Engineering College	LED	4	0.1
54	B block	Ground	Sri Sairam Engineering College	LED	23	0.5
55	C Block	Ground	Sri Sairam Engineering College	LED	96	1.9
56	D Block	Ground	Sri Sairam Engineering College	LED	6	0.1
57	D Block	Second	Sri Sairam Engineering College	LED	1	0.0
58	G Block	Ground	Sri Sairam Engineering College	LED	3	0.1
59	G Block	First	Sri Sairam Engineering College	LED	15	0.3
60	G Block	Second	Sri Sairam Engineering College	LED	15	0.3
61	G Block	Third	Sri Sairam Engineering College	LED	18	0.4
62	G Block	Forth	Sri Sairam Engineering College	LED	24	0.5
63	G Block	Fifth	Sri Sairam Engineering College	LED	46	0.9
64	H Block	Ground	Sri Sairam Engineering College	LED	34	0.7
65	H Block	First	Sri Sairam Engineering College	LED	289	5.8
66	H Block	Second	Sri Sairam Engineering College	LED	200	4.0
67	H Block	Third	Sri Sairam Engineering College	LED	115	2.3
68	H Block	Forth	Sri Sairam Engineering College	LED	6	0.1
69	I Block	First	Sri Sairam Engineering College	LED	23	0.5
70	J Block	Third	Sri Sairam Engineering College	LED	20	0.4
71	K Block	First	Sri Sairam Engineering College	LED	18	0.4
72	K Block	Second	Sri Sairam Engineering College	LED	64	1.3
73	K Block	Third	Sri Sairam Engineering College	LED	16	0.3
74	L Block	First	Sri Sairam Engineering College	LED	13	0.3
75	L Block	Second	Sri Sairam Engineering College	LED	64	1.3
76	M Block	First	Sri Sairam Engineering College	LED	3	0.1
77	M Block	Third	Sri Sairam Engineering College	LED	3	0.1
78	Boys Hostel A		Sri Sairam Engineering College	LED	69	1.4
79	Boys Hostel B		Sri Sairam Engineering College	LED	25	0.5

S. NO	NAME OF THE BLOCK	FLOOR	LOCATION	TYPE OF LIGHT	NO OF LIGHTS	TOTAL POWER, kW
80	Girls Hostel A		Sri Sairam Engineering College	LED	180	3.6
81	Girls Hostel B		Sri Sairam Engineering College	LED	285	5.7
82	SIGMA		Sri Sairam Engineering College	LED	93	1.9
83	MESS		Sri Sairam Engineering College	LED	163	3.3
TOTAL POWER, kW						144.8

14.3 CONVENTIONAL FAN DETAILS

The campus has use conventional fan for ventilation purpose. Details of the conventional fan are as follows.

S. NO	NAME OF THE BLOCK	FLOOR	LOCATION	NO OF FANS	TOTAL POWER, kW
1	A	Ground	Sir Sairam Engineering College	5	0.4
2	A	First	Sir Sairam Engineering College	41	2.9
3	A	Second	Sir Sairam Engineering College	107	7.5
4	B	Ground	Sir Sairam Engineering College	10	0.7
5	B	First	Sir Sairam Engineering College	49	3.4
6	B	Second	Sir Sairam Engineering College	63	4.4
7	C	Ground	Sir Sairam Engineering College	55	3.9
8	C	First	Sir Sairam Engineering College	60	4.2
9	C	Second	Sir Sairam Engineering College	109	7.6
10	D	First	Sir Sairam Engineering College	19	1.3
11	D	Second	Sir Sairam Engineering College	43	3.0
12	E	First	Sir Sairam Engineering College	76	5.3
13	E	Second	Sir Sairam Engineering College	63	4.4
14	E	Third	Sir Sairam Engineering College	54	3.8
15	E	Forth	Sir Sairam Engineering College	54	3.8
16	E	Fifth	Sir Sairam Engineering College	53	3.7
17	F	Ground	Sir Sairam Engineering College	76	5.3
18	F	First	Sir Sairam Engineering College	76	5.3
19	F	Second	Sir Sairam Engineering College	75	5.3
20	F	Third	Sir Sairam Engineering College	68	4.8
21	F	Forth	Sir Sairam Engineering College	53	3.7
22	F	Fifth	Sir Sairam Engineering College	60	4.2
23	G	Ground	Sir Sairam Engineering College	4	0.3
24	G	First	Sir Sairam Engineering College	10	0.7
25	G	Second	Sir Sairam Engineering College	40	2.8
26	G	Third	Sir Sairam Engineering College	40	2.8
27	G	Forth	Sir Sairam Engineering College	40	2.8
28	G	Fifth	Sir Sairam Engineering College	4	0.3
29	H	Ground	Sir Sairam Engineering College	58	4.1

S. NO	NAME OF THE BLOCK	FLOOR	LOCATION	NO OF FANS	TOTAL POWER, kW
30	H	First	Sir Sairam Engineering College	3	0.2
31	H	Second	Sir Sairam Engineering College	73	5.1
32	H	Third	Sir Sairam Engineering College	73	5.1
33	I	Ground	Sir Sairam Engineering College	44	3.1
34	I	First	Sir Sairam Engineering College	17	1.2
35	I	Second	Sir Sairam Engineering College	16	1.1
36	I	Third	Sir Sairam Engineering College	24	1.7
37	J	Ground	Sir Sairam Engineering College	24	1.7
38	J	First	Sir Sairam Engineering College	17	1.2
39	J	Second	Sir Sairam Engineering College	16	1.1
40	J	Third	Sir Sairam Engineering College	24	1.7
41	K	Ground	Sir Sairam Engineering College	14	1.0
42	K	First	Sir Sairam Engineering College	17	1.2
43	K	Third	Sir Sairam Engineering College	24	1.7
44	L	Ground	Sir Sairam Engineering College	17	1.2
45	L	First	Sir Sairam Engineering College	14	1.0
46	L	Third	Sir Sairam Engineering College	25	1.8
47	M	Ground	Sir Sairam Engineering College	17	1.2
48	M	First	Sir Sairam Engineering College	17	1.2
49	M	Second	Sir Sairam Engineering College	24	1.7
50	M	Third	Sir Sairam Engineering College	17	1.2
51	Boys Hostel A		Sri Sairam Engineering College	274	19.2
52	Boys Hostel B		Sri Sairam Engineering College	309	21.6
53	Girls Hostel A		Sri Sairam Engineering College	120	8.4
54	Girls Hostel B		Sri Sairam Engineering College	190	13.3
55	SIGMA		Sri Sairam Engineering College	5	0.4
56	MESS		Sri Sairam Engineering College	136	9.5
TOTAL POWER, kW					211.1

14.4 WALL MOUNTED FAN DETAILS

The wall mounted fan details of the campus are as follows.

S. NO	NAME OF THE BLOCK	FLOOR	LOCATION	NO OF FANS	TOTAL POWER, kW
1	A	Ground	Sri Sairam Engineering College	3	0.18
2	E	First	Sri Sairam Engineering College	1	0.06
3	E	Second	Sri Sairam Engineering College	1	0.06
4	Mess		Sri Sairam Engineering College	3	0.18
TOTAL POWER, kW					0.48

14.5 PEDESTAL FAN DETAILS

The pedestal fan details of the campus are as follows.

S. NO	NAME OF THE BLOCK	FLOOR	LOCATION	NO OF FANS	TOTAL POWER, kW
1	A	Ground	Sir Sairam Engineering College	4	0.24
2	A	First	Sir Sairam Engineering College	5	0.3
3	B	Ground	Sir Sairam Engineering College	6	0.36
4	B	First	Sir Sairam Engineering College	4	0.24
5	B	Second	Sir Sairam Engineering College	2	0.12
6	C	Ground	Sir Sairam Engineering College	2	0.12
7	C	Second	Sir Sairam Engineering College	1	0.06
8	D	First	Sir Sairam Engineering College	1	0.06
9	E	Second	Sir Sairam Engineering College	1	0.06
10	F	Second	Sir Sairam Engineering College	1	0.06
TOTAL POWER, kW					1.62

14.6 AIR CONDITIONER DETAILS

The air conditioner details of the campus are as follows.

S. NO	NAME OF THE BLOCK	FLOOR	LOCATION	MODEL (Split / Window)	NO OF AC'S
1	A	Ground	Sir Sairam Engineering College	Split	37
2	A	First	Sir Sairam Engineering College	Split	14
3	B	Ground	Sir Sairam Engineering College	Split	17
4	B	First	Sir Sairam Engineering College	Split	8
5	B	Second	Sir Sairam Engineering College	Split	5
6	C	Ground	Sir Sairam Engineering College	Split	10
7	C	First	Sir Sairam Engineering College	Split	4
8	C	Second	Sir Sairam Engineering College	Split	1
9	D	First	Sir Sairam Engineering College	Split	20
10	D	Third	Sir Sairam Engineering College	Split	26
11	E	Third	Sir Sairam Engineering College	Split	10
12	F	Second	Sir Sairam Engineering College	Split	1
13	F	Third	Sir Sairam Engineering College	Split	3
14	G	Ground	Sir Sairam Engineering College	Split	1
15	A	Ground	Sir Sairam Engineering College	Centralized	34
16	B	Ground	Sir Sairam Engineering College	Centralized	3
17	D	First	Sir Sairam Engineering College	Centralized	1
18	G	Ground	Sir Sairam Engineering College	Centralized	16
19	G	Fourth	Sir Sairam Engineering College	Centralized	15
20	H	Ground	Sir Sairam Engineering College	Centralized	5
21	H	Third	Sir Sairam Engineering College	Centralized	12

S. NO	NAME OF THE BLOCK	FLOOR	LOCATION	MODEL (Split / Window)	NO OF AC'S
22	H	Fifth	Sir Sairam Engineering College	Centralized	4
23	J	Third	Sir Sairam Engineering College	Centralized	3
24	K	First	Sir Sairam Engineering College	Centralized	6
25	K	Second	Sir Sairam Engineering College	Centralized	15
26	SIGMA		Sri Sairam Engineering College	Centralized	26
TOTAL ON OF AC					297

15.0 ALTERNATE SOURCES OF ENERGY

15.1 SOLAR ENERGY

Solar panel survey has been carried out and details as follows:

Name of the block	SEC (All the blocks in the College)
Wattage of each panel, W	275
Total Capacity, kW	375
Availability of Net Metering	Yes

In nearby future they planned to expand the solar panel capacity of 500 kW.



15.2 BIOGAS PLANT

It is generated by the hostels and kitchen. These wastes are used to generate biogas. The solid waste from the toilet is diverted to the biogas plant via septic tanks. The unique feature of the bio-gas plant is that it is installed to link the toilet. The bio-gas usage reduces the LPG cost. The digested sludge is used as a manure for the garden, and the Water is used for gardening. Biogas plants rely on anaerobic digestion, a fermentation process in which waste is digested by microbes to produce methane gas (biogas).



16.0 EXECUTIVE SUMMARY

S. No	Energy Efficiency Measures	Estimate annual Energy Savings, kWh/Annum	Estimated Investment, INR	Monetary Savings, INR	payback Period, months	Emission Reduction, t CO2/Annum
1	Replace 2948 no's existing Fluorescent Tube light to 2948 no's LED Tube Light	82544	1768800	681343	31	70
2	Replace 3016 no's existing Conventional fan to 3016 no's BLDC Fan	184730	11460800	1524816	90	157
3	Replace 8 no's existing wall mounted fans to 8 no's BLDC wall mounted Fans	350	30400	2889	126	0
4	Replace 27 no's existing Pedestal Fans to 27 no's BLDC Pedestal Fans	2126	108000	17551	74	2
5	Replace 157 no's existing 1.5 TR 3-Star Split AC to 1.5 TR 5 - Star Invertor Split AC	133764	6280000	133764	68	114
		403514	19648000	2360363	78	343

Annual Electrical Energy consumption, kWh/Annum

2,042,634

Annual Electrical Energy Savings, kWh/Annum

403514

Electrical Energy Savings, %

19.8

17.0 ENERGY CONSERVATIVE MEASURES

17.1 Replace 2948 no's existing Fluorescent Tube light to 2948 no's LED Tube Light

Observation:

During audit, it was observed that few FTL lights were used for illumination purpose. FTL lights consumes high power than LED Lights.

Recommendation:

It is recommended to replace those FTL lights to energy efficient LED lights for better lumens and to lower the power consumption. The lumens of FTL light are 63 per watt whereas the lumens of LED light are 120 per watt.

Estimated Savings:

Replace existing Fluorescent Tube light to LED Tube Light		
Description	Units	Values
Quantity of existing Fluorescent Tube light	Nos	2,948
Wattage of Fluorescent Tube light	W	36
Present operating hours	Hours/Annum	1,750
Average unit cost	INR/kWh	8.25
Energy Consumption by existing Fluorescent Tube light	kWh/Annum	185,724
Wattage of LED Tube Light	W	20
Energy Consumption by LED Tube Light	kWh/Annum	103,180
Cost of one LED Tube Light	INR	600
Energy savings	kWh/Annum	82,544
Cost Savings	INR/Annum	681,343
Investment	INR	1,768,800
Payback Period	Months	31

17.2 Replace 3016 no's existing Conventional fan to 3016 no's BLDC Fan

Observation:

During audit it was observed that conventional ceiling fans were used for ventilation purposes.

Recommendation:

It is recommended to replace those conventional ceiling fans with Energy efficient BLDC fans to observe the following energy savings.

Estimated Savings:

Replace existing Conventional fan to BLDC Fan		
Description	Units	Values
Quantity of existing Conventional fan	Nos	3,016
Wattage of Conventional fan	W	70
Present operating hours	Hours/Annum	1,750
Average unit cost	INR/kWh	8.25
Energy Consumption by existing Conventional fan	kWh/Annum	369,460
Wattage of BLDC Fan	W	35
Energy Consumption by BLDC Fan	kWh/Annum	184,730
Cost of one BLDC Fan	INR	3,800
Energy savings	kWh/Annum	184,730
Cost Savings	INR/Annum	1,524,816
Investment	INR	11,460,800
Payback Period	Months	90

17.3 Replace 8 no's existing wall mounted fans to 8 no's BLDC wall mounted Fans.**Observation:**

During audit it was observed that wall mounted fans were used for ventilation purposes.

Recommendation:

It is recommended to replace the wall mounted fans to BLDC wall mounted Fans to reduce energy consumption.

Estimated Savings:

Replace existing wall mounted fans to BLDC wall mounted Fans		
Description	Units	Values
Quantity of existing wall mounted fans	Nos	8
Wattage of wall mounted fan	W	60
Present operating hours	Hours/Annum	1750
Average unit cost	INR/kWh	8.25
Energy Consumption by existing wall mounted fan	kWh/Annum	840
Wattage of BLDC wall mounted Fan	W	35
Energy Consumption by BLDC wall mounted Fan	kWh/Annum	490
Cost of one BLDC wall mounted Fan	INR	3,800
Energy savings	kWh/Annum	350
Cost Savings	INR/Annum	2,889
Investment	INR	30,400
Payback Period	Months	126

17.4 Replace 27 no's existing Pedestal Fans to 27 no's BLDC Pedestal Fans

Observation:

During audit it was observed that Pedestal Fans were used for ventilation purposes.

Recommendation:

It is recommended to replace the Pedestal Fans to BLDC Pedestal Fans to reduce energy consumption.

Estimated Savings:

Replace existing Pedestal Fans to BLDC Pedestal Fans		
Description	Units	Values
Quantity of existing Pedestal Fans	Nos	27
Wattage of Pedestal Fan	W	80
Present operating hours	Hours/Annum	1750
Average unit cost	INR/kWh	8.25
Energy Consumption by existing Pedestal Fan	kWh/Annum	3,780
Wattage of BLDC Pedestal Fan	W	35
Energy Consumption by BLDC Pedestal Fan	kWh/Annum	1,654
Cost of one BLDC Pedestal Fan	INR	4,000
Energy savings	kWh/Annum	2,126
Cost Savings	INR/Annum	17,551
Investment	INR	108,000
Payback Period	Months	74

17.5 Replace 157 no's existing 1.5 TR 3- Star Split AC to 1.5 TR 5 - Star Invertor Split AC

Observation:

During audit it was observed 3-star Air Conditioners that were used for ventilation purposes.

Recommendation:

It is recommended to replace those Air Conditioners with energy efficient Air Conditioners to observe the following energy savings.

Estimated Savings:

Replace existing 1.5 TR 3- Star Split AC to 1.5 TR 5 - Star Invertor Split AC		
Description	Units	Values
Total Number of 3- Star Split AC	Nos	157
Wattage of 3- Star Split AC	W	1408
Running hours	hours/day	6
Total working days (Approx)	days/Annum	250
Average unit cost	INR/kWh	8.25
Energy Consumption by existing 3- Star Split AC	kWh/Annum	331,584
Wattage of 5 - star Invertor AC	W	840
Energy Consumption by 5 - star Invertor AC	kWh/Annum	197,820
Cost of one 5 - star Invertor AC	INR	40,000
Energy savings	kWh/Annum	133,764
Cost Savings	INR/Annum	1,104,128
Investment	INR	6,280,000
Payback Period	Months	68

SGS**CERTIFICATE**

SGS Taiwan GHG Group

This to certify that

B SENTHIL KUMAR

has successfully passed the course assessment and examination for

ISO14064:2006 GHG Inventory and VerificationHeld on: 2nd-4th March 2009

Location: Gurgaon, India


Richard Huang
Technical Manager
SGS Taiwan GHG Group

TW-I-0082

Certificate Number

SGS United Kingdom Limited
Climate Change Programme



In association with

**THIS IS TO CERTIFY THAT***B. Senthil Kumar***has successfully completed a course approved by the
Institute of Environmental Management & Assessment in****ADVANCED EMS AUDITOR
(ISO 14001:2004)**

(achieving an overall mark of 75%)

13th to 17th October 2008

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SGS Taiwan GHG Group

This to certify that

B SENTHIL KUMAR

has successfully passed the course assessment and examination for

ISO14064:2006 GHG Inventory and VerificationHeld on: 2nd-4th March 2009

Location: Gurgaon, India


Richard Huang
Technical Manager
SGS Taiwan GHG Group

TW-I-0082

Certificate Number

SGS United Kingdom Limited
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ऊर्जा दक्षता ब्यूरो

(भारत सरकार, विद्युत मंत्रालय)

BUREAU OF ENERGY EFFICIENCY

(Government of India, Ministry of Power)



स्पीड
SPEED POST

F.No.09/06/07/IMPL/ECBC/5977-6028

August 21, 2019

Shri Praveen Kumar Yadav
Environmental Design Solution Pvt Ltd
A-4/3, Basement, Vasant Vihar,
New Delhi - 110057

Subject: Empanelment of ECBC Expert Professional

Dear Shri Praveen,

This has reference to your application for empanelment of ECBC Expert Professional for implementing the Energy Conservation Building Code (ECBC). We are pleased to inform that you have been shortlisted to act as the ECBC Expert professional for helping in building technical capacity, compliance with code and effective implementation of it. The validity of the empanelment is for two years or till the creation of a pool of Certified Energy Auditors (Buildings), whichever is earlier. A brief on roles and responsibilities of professionals will be as per the prevailing ECBC Rules, 2018, is enclosed herewith.

It may be further noted that "the professional working with ECBC Cell in States/UTs shall not work on the projects for the same State/UT during their tenure as a part of ECBC cells and after one year from the last date of their incumbent in the ECBC cell. Such professionals may provide technical assistance in other State/UT for other projects."

With best regards,

Yours sincerely,


(Saurabh Diddi)
Director

Encl: As above



Certificate of Compliance

This is to certify that

NIN Energy India Private Limited

JUSA Complex, New No 47, Old No 21/2, Ponnamman Koil Street, Kottur,
Chennai - 600085 (Tamil Nadu), India.

has been assessed by RSI and found to comply with the requirements of

ISO/IEC 17020:2012

Operation of various types of bodies performing inspection - Requirements

for the following activities:

**Mandatory Energy Audit, Environment Audit, Green Audit, PAT Measurement and Verification (M&V),
Power Quality Audit, Infrared Thermography, Electrical Safety Audit, Energy Management Training,
Energy Management System, Measurement & Verification, Green Building Services,
Renewable Energy Services, Carbon Foot Printing and Water Audit**

Certificate Nummer / Certificate No. : IE-BV-2207-5410

Datum Van Publicatie / Date of Issue : 27/07/2022
Vervaldatum / Date of Expiry : 26/07/2025
1st Annual surveillance audit due on : 26/06/2023
IInd Annual surveillance audit due on : 26/06/2024

Royal Stancert B.V.

Feitelijke Beoordelingen - Wereldwijde Beoordelingen
Certificate Nummer / Certificate No. : Q-300-10000-10000

Regd. Office - Joop Geesinkweg 701, 1114 AB Amsterdam, The Netherlands.
(KvK-Nummer 71431802 / RSIN 858713159 - Rechtsvorm - Besloten Vennootschap).

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Director (Certification)



PAC-GEAC-1506-299

