REPORT ON

ENERGY, ENVIRONMENT AND GREEN AUDIT

SRI SAIRAM ENGINEERING COLLEGE

SAI LEO NAGAR, WEST TAMBARAM,

CHENNAI – 600 044.

AUDIT CONDUCTED AND REPORT PREPARED BY

NIN ENERGY INDIA PRIVATE LIMITED
JUSA COMPLEX, NEW NO 47, OLD NO 21/2
PONNIAMMAN KOIL STREET, KOTTUR,
CHENNAI-600085
TAMILNADU, INDIA.

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ACKNOWLEDGEMENT

We thank management of **SRI SAIRAM ENGINEERING COLLEGE** for awarding the Energy, Environment and Green Audit study at their facility at Sai Leo Nagar, West Tambaram, Chennai – 600 044. to NIN Energy India Private Limited. This report is the result of Energy Audit conducted at **SRI SAIRAM ENGINEERING COLLEGE** on 26/07/2023.

We wish to thank the management of **SRI SAIRAM ENGINEERING COLLEGE** for the support during the audit and for successful completion of the audit.

For NIN ENERGY INDIA PRIVATE LIMITED

(B. SENTHILKUMAR)

ACCREDITED ENERGY AUDITOR (AEA 023)


ENERGY INDIA PVT. LTD.
CHENNAI
600 085

Table of Contents

ABBREVIATIONS

EE	Energy Efficiency
Dept	Department
EER	Energy Efficiency Ratio
INR	Indian Rupees
KL	Kilo Litre
kWh	Kilo Watt Hour
LED	Light Emitting Diode
LPG	Liquified Petroleum Gas
t CO2	Tonne Of Co2
FTL	Fluorescent Tube Light
TR	Ton of refrigeration
BLDC	Brushless direct current motor

1.0 INTRODUCTION ABOUT GREEN AUDIT

Green Audit is the process of assessing the environmental impact of an organization, process, project, product, etc.

Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation.

2.0 OBJECTIVES

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems.

The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are:

- To map the Geographical Location of the college
- To document the floral and faunal diversity of the college
- To record the meteorological parameter of college
- To document the ambient environmental condition of weather, air, water and noise of the college
- To document the waste disposal system
- To estimate the Energy requirements of the college
- To report the expenditure on green initiatives during the last five years

3.0 ABOUT THE COLLEGE

Sri Sairam Engineering College, Chennai, established in 1995 by MJF.Ln. Leo Muthu, Chairman of Sapthagiri Educational Trust, is a non-profit and non-minority institution. A well-defined vision, a highly committed mission, and dedicated leadership enable Sri Sairam Engineering College to be among the best educational institutions in the country. Since its inception, the institution has grown into a vast conglomerate of magnificent buildings, state-of-the-art laboratories, sophisticated internet centres, a modern digital library block, and a superlative sports complex, each a landmark in itself across 300 acres. The institution is situated on a sprawling campus with architecturally and aesthetically designed buildings, blocks, stadiums, auditoriums, hostels, gymnasiums, and sports grounds. The institution is affiliated with Anna University and approved by the All-India Council for Technical Education (AICTE), New Delhi. Imbibed with the message of Shridi Saibaba, our chairman ventured into the realm of providing quality technical education to both urban and rural students from Tamil Nadu as well as from other states, offering a flexible and real-world-based learning approach and a global ambience in pursuing education. Sri Sairam Institute of Management, also a unit of Sri Sairam Engineering College, was established in 1997 and offers an MBA programme. Our chairman has not only stopped with his vision of providing Technical Education but has also ventured into the fields of medical sciences by starting Medical Colleges for Indian medicine, namely Siddha, Ayurveda, and Homoeopathy. He was also instrumental in starting "The Academy for the Blind" and "Home for the Aged" under the community service programmes of the Lions Club.

S. No	Description	Details
1	Name of the college	Sri Sairam Engineering College
2	Address	Sai Leo Nagar, West Tambaram, Chennai - 44
3	No of building blocks & Building blocks details	20
4	No of departments and its details	14
5	No of student's details	5369
6	No of Teaching staff	389
7	No of Non-Teaching staff	141
8	No of Guest lectures	1
9	No of Classrooms	115
10	No of Labs	178
11	No of Smart classrooms	42
12	Courses available in the college	AD, AM, CB, CE, CI, CJ, CS, EC, EE, EI, IC, IT, ME, MU
13	No of hostel building	7

4.0 ABOUT NIN ENERGY INDIA PRIVATE LIMITED

NIN Energy India Private Limited is providing Energy Related services like Energy Audit, Power Quality Audit, Infrared Thermography, Thermal Audit, PAT Monitoring and Verification Audit, PAT Consultancy, Green Building Commissioning, Electrical Safety Audit, Internet of Things, Carbon Foot Printing, etc. We have experienced team and helping the customers to manage and reduce their energy consumption.

We are providing complete Energy Services under one roof at a competitive price. Our team members are having more than 10 years of experience in Energy, Renewable Energy and Environmental Engineering with good Academic background.

Our Team Strength

- Accredited Energy Auditor by Bureau of Energy Efficiency, Government of India
- Certified Energy Auditors by Bureau of Energy Efficiency, Ministry of power
- Certified Measurement and Verification Professionals (CMVP) by EVO
- Certified Level II Thermographer
- Enlisted with Tamil Nādu Energy Development Agency (TEDA) as a system Integrator for Solar PV systems.
- Lead Auditors for ISO 50001 (Energy Management System)
- Lead Auditors for ISO 14064 (Green House Gas inventory and verification)
- Lead Auditors for ISO14000 (Environmental Management System)

4.1 AUDIT TEAM

The NIN Energy India private Limited team did the green audit assessment in the college. Team details are as follows.

Name	Designation
Mr. B SENTHIL KUMAR	• Accredited Energy Auditor by Bureau of Energy Efficiency • ISO 50001:2018 Lead Auditor • ISO 14064 Lead Auditor • ISO 14001 Lead Auditor
Mr. T. KARTHIKEYAN	Certified Energy Auditor by Bureau of Energy Efficiency
Mr. S HARISHRAGAVENDHAR	Sr. Engineer
Mr. P. ANANDH	Sr. Engineer

4.2 INSTRUMENTS USED FOR THE AUDIT

S. No	Name of the Instrument
1	Air quality meter
2	Noise meter
3	Lux meter
4	Clamp meter

5.0 LOCATION OF THE INSTITUTION

The college is located in Sai Leo Nagar, West Tambaram, Chennai – 600 044.

Latitude: 12.9602° N

Longitude: 80.0574° E

6.0 ENVIRONMENTAL AUDIT

Carbon footprint is the total sum of greenhouse gases (GHG) emission caused by an organization, event, product, or person. As we are aware, the increasing concentration of GHGs in the atmosphere can accelerate climate change and global warming, it is very necessary to measure these emissions from our day-to-day activities. The first step towards managing GHG emissions is to measure them. There are some standards and guidelines to measure GHG emissions like GHG protocol, ISO 14064, the more comprehensive one Life Cycle Assessment (LCA), and market-based mechanisms. Out of them, ISO 14064 is an offset protocol and independent, voluntary GHG project accounting standard helps to quantify GHG emission of the organization, event, product, or person.

Our day-to-day activities are dependent on electricity which is mostly coming from coal-based power plants, Diesel and Petrol for our vehicles and LPG for cooking in our kitchen. All of the energy we use is derived from these fossil fuels which are GHG intensive. The following methodology helps you to calculate your carbon footprint resulting from the use of Electricity, Petrol, Diesel, and LPG.

Floristic status of the institution:

The Current situation of planted trees are as follows:

S. No	Type of Trees	Total No of Trees
1	No of matured trees (Age more than 10 years)	1850
2	No of Semi matured trees (Age below 10 years)	1950
3	No of plants/herbs/Shrubs	8250
4	No of medicinal plants	725
5	Any other plants details, if any	Nil

1. Therefore, the carbon absorption capacity of 1850 matured trees in the campus of the Institution (1850 × 6.8 kg CO2) = 12580 kg of CO2.
2. The carbon absorption capacity of 1950 semi-grown trees in campus of (1950 × 3.4 kg CO2/Annum) = 6630 kg of CO2/Annum.
3. There are 8250 bushes of various species being raised in the gardens of the Institution, total carbon absorption was calculated to be (8250 × 0.2 kg CO2/Annum) = 1650 kg of CO2/Annum.

The grand total of carbon absorption by the flora in the campus is 20860 kg per year.

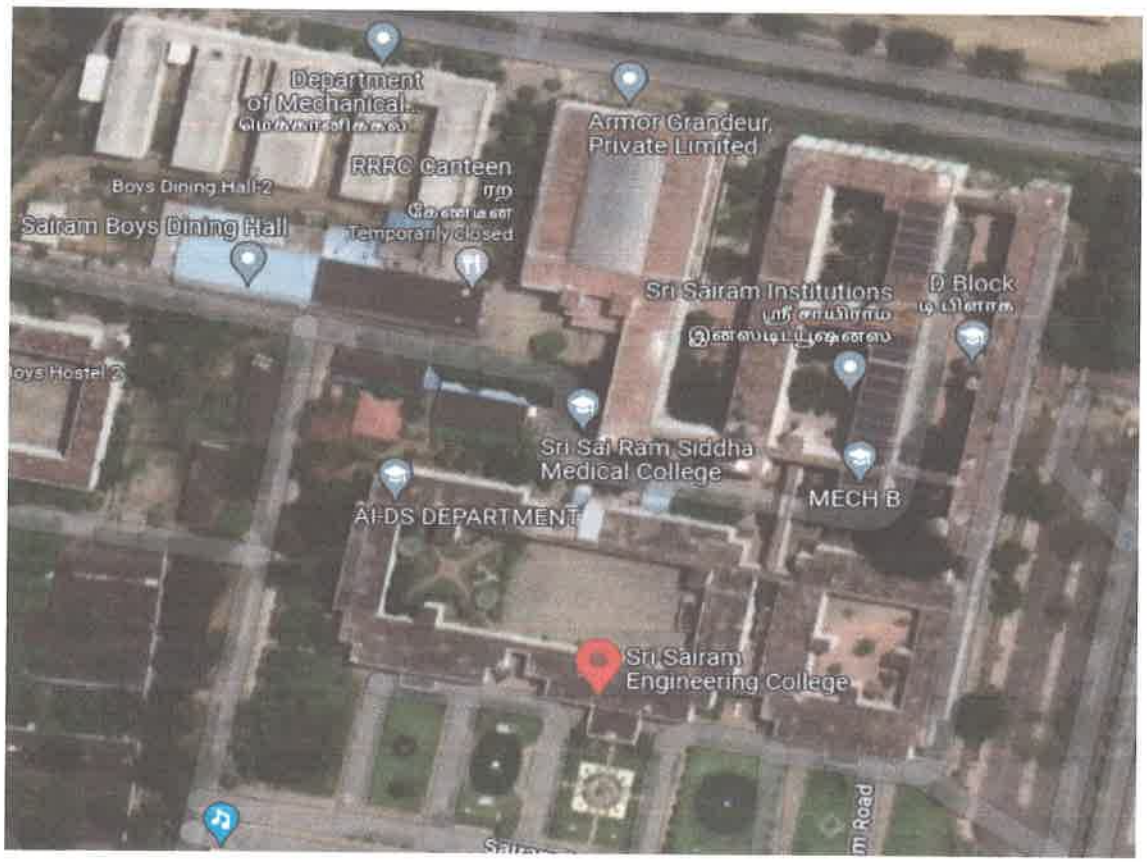
Description	Unit	Values
Annual Emissions from Electricity, tCO2	tCO2 /year	1736
TOTAL EMISSIONS FROM FACILITY	tCO2 /year	1736
Carbon absorption by mature trees, semi mature trees, bushes, and lawns	tCO2 /year	-20.86
Net carbon emission of the campus	tCO2 /year	1715
Carbon reduction opportunities by energy saving projects	tCO2 /year	343
Estimated Carbon Emissions after Implementing the Energy Saving Projects	tCO2 /year	1372

7.0 GREEN AUDIT

A "green audit" is another name for an environmental audit. These audits assess various facets of industrial operations. Audits determine whether a company's operations impact the air, water, waste, and soil. These audits help businesses avoid compliance issues. They also guide the minimization of a company's impact on the environment to support sustainability. Plus, audit data can be used to improve workplace safety.

7.1 LAND USE ANALYSIS

GENERAL OVERVIEW OF THE CONCEPT OF LANDUSE Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape. Remote sensing and GIS techniques are now providing new tools for advanced land use mapping and planning. The collection of remotely sensed data facilitates the synoptic analyses of earth system, functions, patterning, and change in the local, regional as well as at global scales over time. Satellite imagery particularly is a valuable tool for generating land use map.



7.2 THE INSTITUTIONAL INITIATIVES FOR GREENING THE CAMPUS ARE AS FOLLOWS

7.3 FAUNAL DIVERSITY IN COLLEGE

S. NO	COMMON NAME	SCIENTIFIC NAME	IMAGES
1.	Swan	Cygnus	
2.	Pigeon	Columbidae Livia	
3.	Grey Crow	Corvous Tristis	
4.	Green Parrot	Psittacula Eupatria	

S. NO	COMMON NAME	SCIENTIFIC NAME	IMAGES
5.	yellow-billed babbler	Turdoides affinis	
6.	squirrel	Sciuridae	
7.	Myna	Acridotheres tristis	
8.	Dog	Canis lupus familiaris	

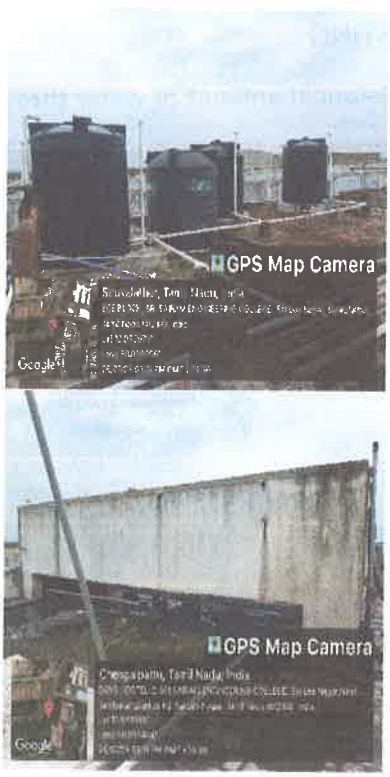
8.0 WATER AUDIT

8.1 DIFFERENT SOURCES OF WATER AND QUANTITY RECEIVED ON MONTHLY BASIS AND AREAS OF UTILIZATION

There are about 11 wells and 5 sumps on our campus to cater to the needs of the people, and there is a lot of surpluses. Out of this, 9 wells are 30 feet in diameter, and the remaining 2 wells are 20 feet in diameter. The water is very clean and hygienic. The college stores the water in an overhead tank.

The water management system details are as follows.

S. No	Parameters	Response
1	Source of water	Ground Water, Rainwater
2	No of Wells	13 (10 in Use)
3	No of motors used	22 pumps
4	Overall average water consumption in the institution per day (in liters)	283460
5	Average drinking water consumption in the hostel per day (in liters)	106700
6	Average drinking water consumption in the college per day (in liters)	176760
7	Average Water consumption for washroom per day (in liters)	240990
8	Any water wastage	NO
9	Whether wastewater from labs mixed with ground water	NO
10	Rainwater harvest available	16



8.2 RO PLANT

There is a great demand for water in our society to fulfil the needs of public and also various organizations. Considering this, our college has taken up rainwater harvesting system. Our Organization requires water for laboratories, drinking facilities, cleaning purposes, for gardening etc. Wells and Ponds are the two major sources for us. The Institute ensures that the water wastage is minimized at an optimal level and the leaky taps and pipes are under regular check and hence no loss of water is observed, neither by any leakages nor by overflow from overhead tanks. On an average, the total use of water in the college is around 20,000 L/day which includes 10,000 L/day for domestic purposes, 5000 L/day for gardening and 5,000 L/day for Laboratories. The college has implemented rainwater harvesting (RWH) within its campus for storing and reuse at 22 places and it has reduced its dependence on water tankers.

8.3 RAINWATER HARVESTING

The college saves a substantial amount of water through Rainwater Harvesting and the water saved is used to water the flora in the campus. The water which is collected is led to the ground water. (Usage: Ground water). The proposed system depth is 6 Ft depth, 4*4 Dia. There are 16 buildings in the college every building has rainwater harvesting system.

9.0 WATER CONSERVATION MEASURES

9.1 REPLACEMENT OF NORMAL WATER TAPS WITH WATER EFFICIENT TAPS

At present, normal water taps are used in the wash basin and showers. It is recommended to change water efficient water taps in the campus which will save 50 % of the water consumption in taps and showers.

S. No	Description	Units	Values
1	Normal water taps flow	LPM	10
2	Water efficient taps flow	LPM	5
3	Water savings	%	50

Cost of the water taps and showers.

S. No	Description	Price
1	**Water efficient tap nozzle**	**700**
2	**Water efficient showers**	**1500**

9.2 PROPOSAL FOR INSTALLING DRIP WATER IRRIGATION SYSTEM FOR TREES AND PLANTS

In campus, there are around 2326 plants and trees were being grown. Water required for the plants and Trees about 5000 Litres per day (Approximately). It is highly proposed to install drip water irrigation system in the campus which will save more amount of water.

10.0 WASTE DISPOSAL OF COLLEGE

S. No	Description	Details
1	Waste disposal methods adopted and followed in the campus	Yes
2	Way of disposing normal dry waste in the campus	Composting method
3	Any steps taken by college for separation of waste	Yes
4	No of dustbins available in the campus	425

The college maintains garbage bins. Segregated dustbins are placed at different locations throughout the college campus. Also, garbage from different locations is collected on a daily basis in the morning. This garbage is then taken away by approved vendors.

10.1 SOLID WASTE MANAGEMENT

- The total solid waste collected in the campus is 20 Kg/day on an average, from tree droppings, cups, paper etc. The waste is segregated at source by providing separate dustbins for Bio-degradable and Plastic waste.
- Single sided used papers are reused for writing and printing in all departments. Less plastic waste (average 0.1Kg/day) is generated by few departments, office, etc., it is collected and given to the vendor on a regular basis. Metal and wooden waste is stored and given to authorized scrap agents for further processing.
- Glass bottles are reused in the laboratories. The food waste is converted into biogas and is again used for the kitchen. Sanitary napkins are disposed of using incineration process.
- E-waste from labs is properly collected and is given to the licensed recycler, reused wherever possible, donated and sold if possible. Non-working computers, monitors, and printers are discarded and scrapped on a systematic basis.
- Some parts useful for other systems are kept aside for future use. Students are also imparted awareness and education about E-Waste. Our institute has a CII E-Waste Collection centre, and they collect a considerable amount of E-Waste.

10.2 DRY LEAVES WASTE MANAGEMENT

VERMICOMPOST:

Around 300 kg of green waste is collected from the surroundings on a regular basis and is Segregated and subjected to landfills and vermin compost, producing over 200 kg of manure. In addition to that, to make the manure more susceptible to being the best fertilizer, earthworms are used. added to the biomass. The earthworms can survive only at a specific temperature. So, to maintain the constant temperature (18 to 30), PH (6.5 to 7.5), and moisture content (50 to 60%) of the oil, a constant monitoring and control system has been adopted for the best outcome of the manure.

Impact:

The majority of the solid waste generated on campus can be reduced to quality organic manure. Can be produced that can be used for garden purposes, through which the quality of the Soil can be retained, and a 100% ecology-supported product developed. The automated process of Vermin-compost will be quite essential to meet the economic standards. The essential the thing is that vermin-compost production involves manpower to make the proper development. Progress. This helps provide work for many women, which leads to many women entrepreneurs. Thereby laying the way for women's empowerment. In the future, the backward category of people in the nearby adopted villages will be given first priority for the job opportunity to improve them standard of living.

10.3 WASTE RECYCLING SYSTEM

FLORAL WASTE TO AGARBATHI STICKS

The use of floral waste as a raw material for the production of agar Bathi sticks has gained popularity in recent years as a way of reducing waste and promoting sustainability. To improve the standard of living of the women's community, they have been trained to convert flower waste into agar Bathi. With their help, it is possible to convert 1 kg of daily-generated floral waste into agar Bathi sticks. The process of converting floral waste into agar Bathi sticks involves collecting the waste material, cleaning and drying it, grinding it into a fine powder, mixing it with other ingredients such as gums, perfumes, and essential oils, and then rolling it into sticks. The dried sticks are dried completely and packed for sale. In conclusion, converting floral waste into agar Bathi sticks is a practical and environmentally friendly solution to the problem of waste management.

11.0 AIR QUALITY OF THE COLLEGE

The Air (Prevention and Control of Pollution) Act 1981 was enacted by the Central Government with the objective of arresting the deterioration of air quality. The Air (Prevention and Control of Pollution) Act 1981 describes the main functions of the Central Pollution Control Board (CPCB) as follows:

- To Advise the Central Government on any matter concerning the improvement of the quality the air and the prevention, control, and abatement of air pollution.
- To plan and cause to be executed a nation-wide programme for the prevention, control and abatement of air pollution.
- To provide technical assistance and guidance to the State Pollution Control Board.
- To carry out and sponsor investigations and research related to prevention, control and abatement of air pollution.
- To collect, compile and publish technical and statistical data related to air pollution; and
- To lay down and annul standards for the quality of air.

Particulate Matter (PM10 & PM2.5)

A mixture of particles with liquid droplets in the air forms particulate matter. PM 10 are particles that have a size of less than or equal to 10 microns whereas PM2.5 are ultra-fine particles having a size of less than or equal to 2.5 microns.

Sources:

Particulate Matter is released from constructions, smoking, cleanings, renovations, demolitions, constructions, natural hazards such as earthquakes, volcanic eruptions, and emissions from industries such as brick kilns, paper & pulp, etc.

Related effects:

These particles, when inhaled, can penetrate deeper into the respiratory system, and cause respiratory ailments such as asthma, coughing, sneezing, irritation in the airways, eyes, nose, throat irritation, etc.

S. No	LOCATION	Air Quality level		
		PM 1.0	PM 2.5	PM 10
1	C1506_ Electric machines lab.	9	12	13
2	C1504_ Computer center II_ IT lab.	7	10	10
3	C1501_ Chemistry lab 1.	8	12	13
4	C2501_ Chemistry lab 2.	9	11	12
5	C2503_ Physics lab 2.	8	13	13
6	C2506_ P.G lab.	9	11	12
7	C2509_ Physics lab 1.	9	12	14
8	C3504_ H & S Gents staff room.	8	11	11
9	C3109_ I-CSE-B.	7	8	8
10	C3110_ I-CSE-C.	8	9	11
11	C3111_ I-IT-A.	8	14	15
12	C3506_ H & S Ladies staff room.	9	11	14
13	C3113_ I-IT-C.	9	12	14
14	A3107_ I-Civil.	7	12	13
15	A3106_ EEE-B.	8	11	14
16	A3104_ I-ECE-D.	9	11	14
17	A3502_ CSE Department.	7	9	11
18	B3103_ I-EIE-A.	6	8	8
19	B3102_ IOT.	4	9	12
20	B3502_ EIE_ CDAC IOT lab.	9	8	10
21	B3105_ I-AI & DS-C.	8	10	12
22	B2509_ VLSI design lab.	8	10	10
23	B2502_ Process control lab.	9	14	16
24	B2101_ Classroom.	10	11	13
25	B2103_ ICE Staffroom.	10	15	17
26	Artificial Intelligence & data science lab.	5	6	6
27	A2504_ Computer science & Business system.	6	8	10
28	D2104_ Philip Kotler Hall.	13	19	23
29	D2506_ BOT lab.	5	9	11
30	D2108_ FW Tayler Hall.	6	12	14
31	D2102_ hall.	7	11	13
32	D2101_ hall.	8	12	14
33	D3501_ Classroom.	9	11	12
34	D3101_ Classroom.	7	9	13
35	D3102_ hall.	4	7	11
36	D3105_ Classroom.	5	11	14
37	D4503_ MBA Library.	7	13	14
38	F4508_ lab.	9	16	18
39	E4501_ language lab.	1	6	6
40	E4502_ lab.	6	11	14
41	E4504_ Smart class I.	7	9	12
42	E4505_ Smart class II.	8	10	11
43	F4502_ lab.	5	11	13

S. No	LOCATION	Air Quality level		
		PM 1.0	PM 2.5	PM 10
44	F4503_ lab.	6	12	14
45	F4504_ lab.	7	11	12
46	F4505_ lab.	5	12	14
47	F4506_ Research lab.	7	10	11
48	F3503_ Hod office classroom.	8	11	13
49	F3502_ classroom.	8	9	12
50	F3504_ classroom.	9	10	13
51	F1101_ classroom.	9	11	12
52	F5505_ drawing hall.	8	12	14
53	G5505_ lab.	6	10	10
54	G5503_ lab.	7	10	12
55	G5504_ lab.	8	11	14
56	H Block_ COE Office.	8	11	12
57	G6507_ drawing hall.	5	9	11
58	G6508_ lab.	4	4	5
59	G5501_ lab.	5	7	8
60	Alpha hall.	2	5	9
61	Beta hall.	6	10	10
62	Gamma hall.	6	10	11
63	H Block_ Dr. Kalam library hall.	5	9	9
64	H Block_ Dr. Kalam library hall_ first floor.	5	8	7
65	I1501_ Manufacturing technology lab.	4	8	9
66	K2501_ mechatronics lab.	4	6	6
67	F3104_ classroom.	8	10	12
68	F3105_ classroom.	8	11	14
69	F3106_ classroom.	9	10	12
70	F3506_ I year exam cell.	5	8	12
71	F3507_ Exam cell.	6	8	11
72	E3101_ classroom.	6	9	15
73	E3102_ classroom.	8	9	12
74	E3103_ classroom.	7	10	12
75	E3104_ classroom.	8	11	13
76	E3105_ classroom.	9	10	12
77	E3106_ classroom.	7	9	11
78	E3107_ classroom.	8	10	11
79	E3108_ classroom.	8	10	12
80	E3501_ EIE HOD room & Gents staff room.	8	9	9
81	F5501_ Metallurgy lab.	7	8	9
82	F5502_ Drawing Hall.	8	9	12
83	F5503_ Drawing Hall.	9	10	12
84	F5504_ Drawing Hall.	9	11	12
85	F5505_ Drawing Hall.	8	9	11
86	F5506_ Drawing Hall.	9	10	12

S. No	LOCATION	Air Quality level		
		PM 1.0	PM 2.5	PM 10
87	F5507_ Drawing Hall.	9	10	11
88	F5508_ Drawing Hall.	8	9	11
89	F5509_ Drawing Hall.	8	9	12
90	F5510_ Drawing Hall.	5	8	10
91	F5512_ Media Centre.	6	7	9
92	F5513_ Drawing Hall.	9	10	12
93	J1501_ Manufacturing technology lab-II.	6	8	9
94	K1501_ Strength of materials lab.	6	8	7
95	L1501_ Fluid mechanics & Machinery lab.	6	9	11
96	M1501_ Internal combustion engines lab.	7	10	12
97	K2502_ Metrology lab.	5	8	9
98	L2501_ Dynamics lab.	5	8	8
99	M2501_ Heat & mass transfer lab.	6	7	11
100	J2501_ Basic workshop-I.	8	7	9
101	I2501_ Basic workshop-II.	8	9	12
102	K3501_ Mechanical HOD room.	9	11	10
103	M3104_ classroom.	7	8	10
104	M3103_ classroom.	6	8	9
105	M3102_ classroom.	5	8	8
106	M3101_ classroom.	5	8	9
107	K3502_ CAD lab-I.	6	8	9
108	K3503_ CAD lab-II.	6	10	12
109	K3504_ CAD lab-III.	6	10	13
110	L3501_ Staffroom.	7	8	11
111	L3101_ Classroom.	7	9	14
112	L3102_ Classroom.	7	8	12
113	L3103_ Classroom.	7	8	11
114	J3104_ Classroom.	6	8	10
115	J3103_ Classroom.	6	8	7
116	J3102_ Classroom.	5	8	9
117	J3101_ Classroom.	8	7	12
118	I3101_ Classroom.	7	9	12
119	I3102_ Classroom.	8	10	14
120	I3103_ Classroom.	5	9	11
121	I3104_ Classroom.	5	8	12
122	K4501_ Materials research Centre.	6	8	11
123	K4502_ Staffroom.	8	9	9
124	K4503_ Mechanical dept library.	6	11	12
125	K4504_ Clean energy Centre.	6	14	9
126	L4501_ Robotics lab.	8	10	12
127	L4502_ Project display lab-I.	7	9	11
128	L4503_ Project display lab-II.	5	8	10
129	L4504_ Solar research Centre.	8	11	8

S. No	LOCATION	Air Quality level		
		PM 1.0	PM 2.5	PM 10
130	M4101_ Classroom.	6	11	7
131	M4102_ Classroom.	9	12	7
132	M4103_ Classroom.	9	13	9
133	M4104_ Classroom.	5	8	8
134	J4101_ Classroom.	8	9	12
135	J4102_ Classroom.	8	11	14
136	J4103_ Classroom.	7	12	12
137	J4104_ Classroom.	7	9	9
138	I4101_ Classroom.	9	8	8
139	I4102_ Classroom.	8	9	12
140	I4103_ Classroom.	6	5	7
141	I4104_ Classroom.	6	7	12

12.0 NOISE LEVEL IN THE SURROUNDING OF COLLEGE

THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000

The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.

Ambient Air Quality Standards in respect of Noise

Area Code	Category Of Area/Zone	Limits in dB(A) Leq*	
		Day Time	Night-time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note: -

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night-time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places, or any other area which is declared as such by the competent authority.
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.
5. * dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
6. A "decibel" is a unit in which noise is measured.
7. "A", in dB(A) Leq, denotes the frequency weighting in the measurement of
8. noise and corresponds to frequency response characteristics of the human ear.

S. No	LOCATION	Noise Level dB
1	C1506_ Electric machines lab.	65.8
2	C1504_ Computer center II_ IT lab.	60.1
3	C1501_ Chemistry lab 1.	72.1
4	C2501_ Chemistry lab 2.	67
5	C2503_ Physics lab 2.	67
6	C2506_ P.G lab.	67
7	C2509_ Physics lab 1.	64
8	C3504_ H & S Gents staff room.	74
9	C3109_ I-CSE-B.	69
10	C3110_ I-CSE-C.	64
11	C3111_ I-IT-A.	67
12	C3506_ H & S Ladies staff room.	65
13	C3113_ I-IT-C.	66
14	A3107_ I-Civil.	68
15	A3106_ EEE-B.	67
16	A3104_ I-ECE-D.	66
17	A3502_ CSE Department.	64
18	B3103_ I-EIE-A.	66
19	B3102_ IOT.	63
20	B3502_ EIE_ CDAC IOT lab.	65
21	B3105_ I-AI & DS-C.	66
22	B2509_ VLSI design lab.	64
23	B2502_ Process control lab.	65
24	B2101_ Classroom.	63
25	B2103_ ICE Staffroom.	64
26	Artificial Intelligence & data science lab.	59
27	A2504_ Computer science & Business system.	57
28	D2104_ Philip Kotler Hall.	55
29	D2506_ BOT lab.	62.3
30	D2108_ FW Tayler Hall.	64
31	D2102_ hall.	65
32	D2101_ hall.	65
33	D3501_ Classroom.	66
34	D3101_ Classroom.	68
35	D3102_ hall.	65
36	D3105_ Classroom.	63
37	D4503_ MBA Library.	63
38	F4508_ lab.	65
39	E4501_ language lab.	65
40	E4502_ lab.	64
41	E4504_ Smart class I.	63
42	E4505_ Smart class II.	64
43	F4502_ lab.	55
44	F4503_ lab.	59

S. No	LOCATION	Noise Level dB
45	F4504_ lab.	57
46	F4505_ lab.	55
47	F4506_ Research lab.	65
48	F3503_ Hod office classroom.	66
49	F3502_ classroom.	67
50	F3504_ classroom.	67
51	F1101_ classroom.	65
52	F5505_ drawing hall.	65
53	G5505_ lab.	66
54	G5503_ lab.	60.8
55	G5504_ lab.	62.4
56	H Block_ COE Office.	63.6
57	G6507_ drawing hall.	65
58	G6508_ lab.	67
59	G5501_ lab.	64
60	Alpha hall.	61.7
61	Beta hall.	60
62	Gamma hall.	58
63	H Block_ Dr. Kalam library hall.	55
64	H Block_ Dr. Kalam library hall_ first floor.	57
65	I1501_ Manufacturing technology lab.	80
66	K2501_ mechatronics lab.	72
67	F3104_ classroom.	67
68	F3105_ classroom.	66
69	F3106_ classroom.	65
70	F3506_ I year exam cell.	67
71	F3507_ Exam cell.	68
72	E3101_ classroom.	65
73	E3102_ classroom.	66
74	E3103_ classroom.	67
75	E3104_ classroom.	66
76	E3105_ classroom.	65
77	E3106_ classroom.	64
78	E3107_ classroom.	68
79	E3108_ classroom.	69
80	E3501_ EIE HOD room & Gents staff room.	66
81	F5501_ Metallurgy lab.	68
82	F5502_ Drawing Hall.	67
83	F5503_ Drawing Hall.	64
84	F5504_ Drawing Hall.	66
85	F5505_ Drawing Hall.	66
86	F5506_ Drawing Hall.	64
87	F5507_ Drawing Hall.	63
88	F5508_ Drawing Hall.	68

S. No	LOCATION	Noise Level dB
89	F5509_ Drawing Hall.	67
90	F5510_ Drawing Hall.	66
91	F5512_ Media Centre.	65
92	F5513_ Drawing Hall.	62
93	J1501_ Manufacturing technology lab-II.	64
94	K1501_ Strength of materials lab.	66
95	L1501_ Fluid mechanics & Machinery lab.	65
96	M1501_ Internal combustion engines lab.	62
97	K2502_ Metrology lab.	64
98	L2501_ Dynamics lab.	66
99	M2501_ Heat & mass transfer lab.	65
100	J2501_ Basic workshop-I.	67
101	I2501_ Basic workshop-II.	63
102	K3501_ Mechanical HOD room.	64
103	M3104_ classroom.	66
104	M3103_ classroom.	69
105	M3102_ classroom.	62
106	M3101_ classroom.	64
107	K3502_ CAD lab-I.	66
108	K3503_ CAD lab-II.	65
109	K3504_ CAD lab-III.	64
110	L3501_ Staffroom.	66
111	L3101_ Classroom.	66
112	L3102_ Classroom.	64
113	L3103_ Classroom.	67
114	J3104_ Classroom.	65
115	J3103_ Classroom.	64
116	J3102_ Classroom.	68
117	J3101_ Classroom.	69
118	I3101_ Classroom.	66
119	I3102_ Classroom.	67
120	I3103_ Classroom.	64
121	I3104_ Classroom.	65
122	K4501_ Materials research center.	64
123	K4502_ Staffroom.	63
124	K4503_ Mechanical dept library.	65
125	K4504_ Clean energy center.	68
126	L4501_ Robotics lab.	66
127	L4502_ Project display lab-I.	62
128	L4503_ Project display lab-II.	63
129	L4504_ Solar research center.	64
130	M4101_ Classroom.	66
131	M4102_ Classroom.	65
132	M4103_ Classroom.	64

S. No	LOCATION	Noise Level dB
133	M4104_ Classroom.	64
134	J4101_ Classroom.	61
135	J4102_ Classroom.	65
136	J4103_ Classroom.	64
137	J4104_ Classroom.	62
138	I4101_ Classroom.	63
139	I4102_ Classroom.	68
140	I4103_ Classroom.	59
141	I4104_ Classroom.	60



13.0 LUX LEVEL

The lux level survey is carried out in various location of campus by using lux meter and details are as follows.

S. No	LOCATION	Average Lux level
1	C1506_ Electric machines lab.	135
2	C1504_ Computer center II_ IT lab.	138
3	C1501_ Chemistry lab 1.	123
4	C2501_ Chemistry lab 2.	137
5	C2503_ Physics lab 2.	178
6	C2506_ P.G lab.	174
7	C2509_ Physics lab 1.	178
8	C3504_ H & S Gents staff room.	133
9	C3109_ I-CSE-B.	438
10	C3110_ I-CSE-C.	447
11	C3111_ I-IT-A.	163
12	C3506_ H & S Ladies staff room.	149
13	C3113_ I-IT-C.	146
14	A3107_ I-Civil.	228

S. No	LOCATION	Average Lux level
15	A3106_ EEE-B.	170
16	A3104_ I-ECE-D.	156
17	A3502_ CSE Department.	219
18	B3103_ I-EIE-A.	234
19	B3102_ IOT.	203
20	B3502_ EIE_ CDAC IOT lab.	155
21	B3105_ I-AI & DS-C.	172
22	B2509_ VLSI design lab.	155
23	B2502_ Process control lab.	113
24	B2101_ Classroom.	124
25	B2103_ ICE Staffroom.	123
26	Artificial Intelligence & data science lab.	471
27	A2504_ Computer science & Business system.	475
28	D2104_ Philip Kotler Hall.	547
29	D2506_ BOT lab.	285
30	D2108_ FW Tayler Hall.	509
31	D2102_ hall.	461
32	D2101_ hall.	476
33	D3501_ Classroom.	453
34	D3101_ Classroom.	241
35	D3102_ hall.	127
36	D3105_ Classroom.	153
37	D4503_ MBA Library.	144
38	F4508_ lab.	88
39	E4501_ language lab.	116
40	E4502_ lab.	117
41	E4504_ Smart class I.	134
42	E4505_ Smart class II.	121
43	F4502_ lab.	142
44	F4503_ lab.	143
45	F4504_ lab.	163
46	F4505_ lab.	190
47	F4506_ Research lab.	104
48	F3503_ Hod office classroom.	128
49	F3502_ classroom.	138
50	F3504_ classroom.	153
51	F1101_ classroom.	165
52	F5505_ drawing hall.	152
53	G5505_ lab.	137
54	G5503_ lab.	350
55	G5504_ lab.	257
56	H Block_ COE Office.	232
57	G6507_ drawing hall.	121

S. No	LOCATION	Average Lux level
58	G6508_ lab.	123
59	G5501_ lab.	164
60	Alpha hall.	284
61	Beta hall.	388
62	Gamma hall.	398
63	H Block_ Dr. Kalam library hall.	169
64	H Block_ Dr. Kalam library hall_ first floor.	166
65	I1501_ Manufacturing technology lab.	79
66	K2501_ mechatronics lab.	368
67	F3104_ classroom.	148
68	F3105_ classroom.	165
69	F3106_ classroom.	168
70	F3506_ I year exam cell.	171
71	F3507_ Exam cell.	177
72	E3101_ classroom.	168
73	E3102_ classroom.	169
74	E3103_ classroom.	159
75	E3104_ classroom.	168
76	E3105_ classroom.	178
77	E3106_ classroom.	169
78	E3107_ classroom.	171
79	E3108_ classroom.	178
80	E3501_ EIE HOD room & Gents staff room.	182
81	F5501_ Metallurgy lab.	187
82	F5502_ Drawing Hall.	169
83	F5503_ Drawing Hall.	184
84	F5504_ Drawing Hall.	180
85	F5505_ Drawing Hall.	179
86	F5506_ Drawing Hall.	218
87	F5507_ Drawing Hall.	238
88	F5508_ Drawing Hall.	203
89	F5509_ Drawing Hall.	244
90	F5510_ Drawing Hall.	242
91	F5512_ Media center.	175
92	F5513_ Drawing Hall.	175
93	J1501_ Manufacturing technology lab-II.	168
94	K1501_ Strength of materials lab.	179
95	L1501_ Fluid mechanics & Machinery lab.	171
96	M1501_ Internal combustion engines lab.	146
97	K2502_ Metrology lab.	168
98	L2501_ Dynamics lab.	168
99	M2501_ Heat & mass transfer lab.	170
100	J2501_ Basic workshop-I.	173

S. No	LOCATION	Average Lux level
101	I2501_ Basic workshop-II.	181
102	K3501_ Mechanical HOD room.	179
103	M3104_ classroom.	183
104	M3103_ classroom.	178
105	M3102_ classroom.	181
106	M3101_ classroom.	174
107	K3502_ CAD lab-I.	182
108	K3503_ CAD lab-II.	185
109	K3504_ CAD lab-III.	194
110	L3501_ Staffroom.	198
111	L3101_ Classroom.	193
112	L3102_ Classroom.	178
113	L3103_ Classroom.	179
114	J3104_ Classroom.	179
115	J3103_ Classroom.	186
116	J3102_ Classroom.	215
117	J3101_ Classroom.	189
118	I3101_ Classroom.	201
119	I3102_ Classroom.	240
120	I3103_ Classroom.	251
121	I3104_ Classroom.	257
122	K4501_ Materials research center.	176
123	K4502_ Staffroom.	172
124	K4503_ Mechanical dept library.	179
125	K4504_ Clean energy center.	172
126	L4501_ Robotics lab.	171
127	L4502_ Project display lab-I.	243
128	L4503_ Project display lab-II.	185
129	L4504_ Solar research center.	173
130	M4101_ Classroom.	174
131	M4102_ Classroom.	181
132	M4103_ Classroom.	221
133	M4104_ Classroom.	189
134	J4101_ Classroom.	176
135	J4102_ Classroom.	220
136	J4103_ Classroom.	170
137	J4104_ Classroom.	177
138	I4101_ Classroom.	176
139	I4102_ Classroom.	178
140	I4103_ Classroom.	196
141	I4104_ Classroom.	182

14.0 ENERGY AUDIT

14.1 PRESENT ELECTRICAL ENERGY SYSTEM AND ELECTRICAL BILL ANALYSI

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

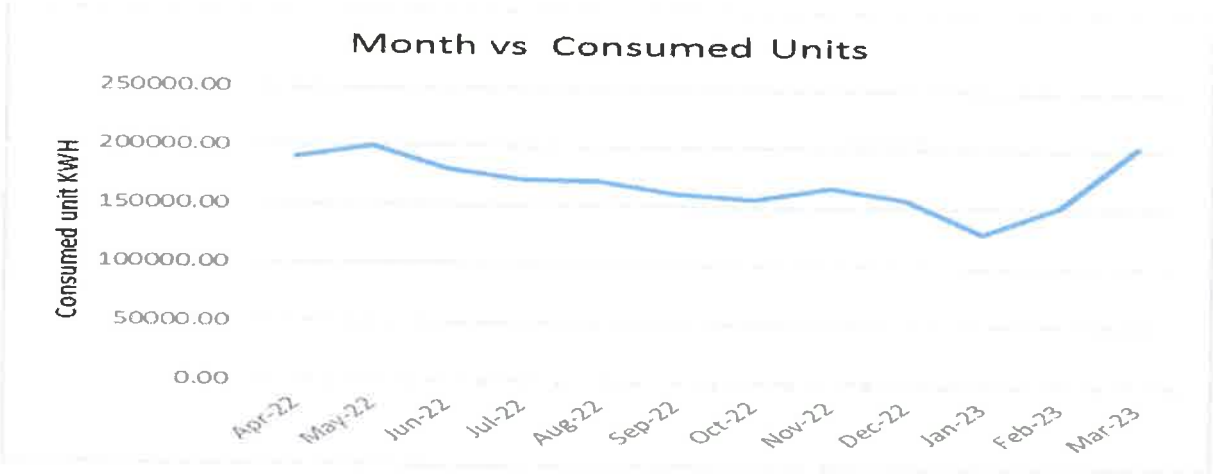
The one-year Electricity Bills for 2022-23 bill has been analysed and details as follows.

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:

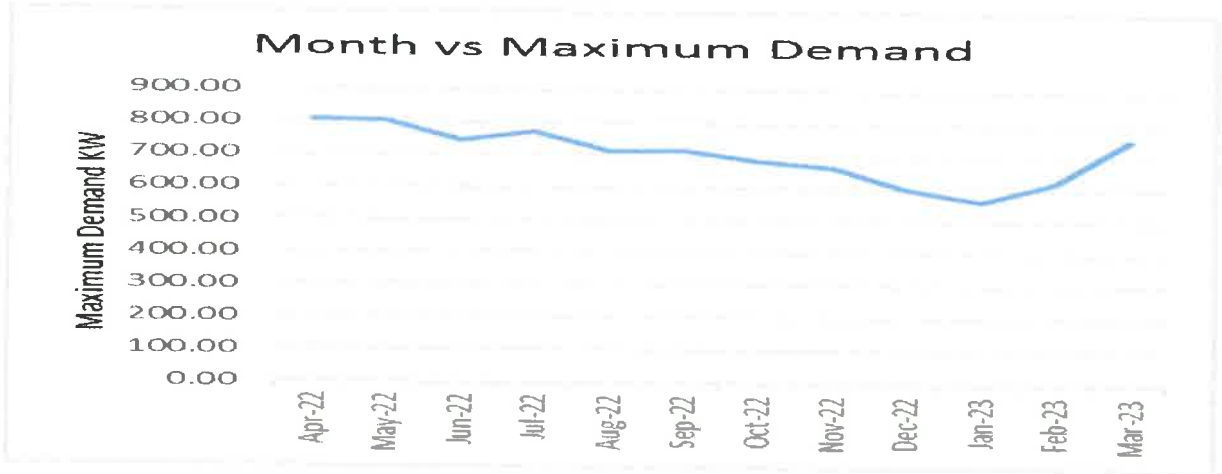
- The college has maintained the average power factor of 0.94, it is recommended to maintain the power factor close to unity.
- The college has maintained the average Demand utilisation of 80%.

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



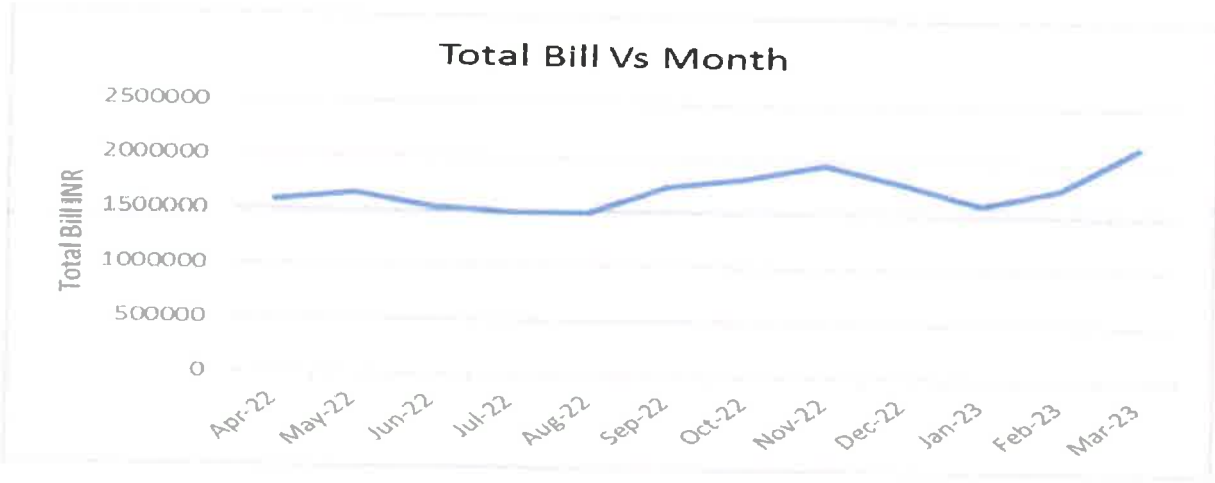
The maximum unit is consumed in the month of March 2023 and minimum unit is consumed in the month of January 2023.

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 Salram 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	Forth	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 menu 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

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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 Verification

Held 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

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In association with

SWISO

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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ऊर्जा दक्षता ब्यूरो
(भारत सरकार, विद्युत मंत्रालय)
BUREAU OF ENERGY EFFICIENCY
(Government of India, Ministry of Power)

150 YEARS OF CELEBRATING THE MAHATMA

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

TM

Factual Assessments - Global Certifications

Certificate of Compliance

This is to certify that

NIN Energy India Private Limited

JUSA Complex, New No 47, Old No 21/2, Ponniamman 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

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

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Ist Annual surveillance audit due on : 26/06/2023
IInd Annual surveillance audit due on : 26/06/2024

Director (Certification)

Royal Stancert B.V.
Feiteliike Beoordelingen - Wereldwijde Beoordelingen
Certificaat Nummer / Certificate No. : Q-XX-XXXX-XXXXX

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

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