SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGINEERING

(An Autonomous Institution)
Kalavakkam – 603 110

OPERATIONS

5.1 Energy Consumption Per Square Meter

Submitted to

The Sustainability Tracking, Assessment & Rating System (STARS)

5.1 Energy consumption per square meter

- Performance year for energy use : 18,82,776 kwh
- Floor area of buildings: 1,41,764 Sqm
- Electricity generated by on-site renewable systems: 6,28,255 kwh
- Description of the on-site renewable systems

SSN Institution has installed solar PV panels having 830 KWp capacity. The electricity generated by the solar energy systems is being used in the project site for reducing the load on the electricity grid. Overall, the campus caters to nearly **70.44%** of solar energy for the infrastructural equipment

- On-site renewable electricity exported – Document attached in folder

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

ONE HUNDRED RUPEES

रु. 100

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU

DL 502171

SHRI SIVASUBRAMANIYA NADAR EDUCATIONAL AND CHARITABLE TRUST

012890

26 APR 2024

KALAVAKKAM 603110

S. SINGARAVELU
STAMP VENDOR
No.2, 4th Main Road, (Market),
Nanganallur, Chennai - 600 061.
L.No: 4255 / 21 / 95

Annexure –VI

Grid Interactive Solar PV Energy Generating System (GISS) – Agreement

This agreement is made and entered into at **Chengalpattu** on this (date) ..18..day of (month)..06..of.2024(Year) between the eligible **M/s.SHRI SIVASUBRAMANIYA NADAR EDUCATIONAL AND CHARITABLE TRUST, Mahabalipuram Road, Kalavakkam-603110.**, as First party.

And **Superintending Engineer/Chengalpattu Electricity Distribution circle/ TANGEDCO,** distribution licensee (herein after called as TANGEDCO) and having its registered office at **No 130 G.S.T. Road Chengalpattu – 603001** as second party of the agreement.

SUPERINTENDING ENGINEER
CEDC / TANGEDCO / Chengalpattu

N. Gopalan
Administrative Officer
SSN College of Engineering
(New No: 19, Old No: 8,
3rd Main Road, Kasthuribai Nagar,
Adyar, Chennai - 600 020.
Ph: 2441 1656 / 2441 6474

And whereas, the TANGEDCO agrees to permit to connect the eligible Prosumer's GISS of Contracted capacity of **1150.0KW** at the premises of **M/s.SHRI SIVASUBRAMANIYA NADAR EDUCATIONAL AND CHARITABLE TRUST, Old Mahabalipuram Road, Kalavakkam-603110, HT.SC No; 099094110329,** and as per conditions of this agreement and regulations/ orders issued by the Tamil Nadu Electricity Regulatory Commission, from time to time for Net feed-in Metering Mechanism.

Both the party hereby agrees to as follows:

1. Eligibility:

1.1Eligibility for Net Feed-in Metering shall be as specified in the relevant Regulations / Codes / Orders of the Tamil Nadu Electricity Regulatory Commission as amended. Eligible prosumer is required to be aware, in advance, of the standards and conditions with which his system has to operate safely with coupled integration with the grid / distribution system of the TANGEDCO.

2. Technical and Interconnection Requirements:

2.1The Eligible prosumer agrees that his GISS plant /station shall conform to the standards and requirements specified in the following Regulations and codes as amended from time to time.

i) CEA's (Technical Standards for connectivity of the Distributed Generating Resources) Regulations, 2013.

ii) Central Electricity Authority (Installation and Operation of Meters) Regulation 2006.

iii) Central Electricity Authority (Measures of Safety and Electric Supply) Regulation, 2010.

iv) Tamil Nadu Electricity Regulatory Commission's (Grid interactive Solar PV Energy Generating Systems) Regulation, 2021.

v) Tamil Nadu Electricity Distribution Code.

vi) Tamil Nadu Electricity Supply Code.

2.2. Eligible prosumer agrees that he has installed or will install, prior to connection of GISS to TANGEDCO's distribution system, an isolation device (both automatic and inbuilt within inverter and external manual relays) and agrees for the

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TANGEDCO to have access to and operation of this, if required and for repair & maintenance of the distribution system.

2.3. Eligible prosumer agrees that in case of a power outage on TANGDECO's system, GISS will shut down, automatically and his plant will not generate power.

2.4. All the equipment connected to distribution system must be compliant with relevant international (IEEE/IEC) or Indian Standards (BIS) and installations of electrical equipment protective devices, earthing standard etc., must comply with Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010 as amended from time to time.

2.5. Eligible prosumer agrees that Licensee will specify the interface / interconnection point and metering point.

2.6. Eligible prosumer and Licensee agree to comply with the relevant CEA regulations in respect of operation and maintenance of the plant, drawing and diagrams, site responsibility schedule, harmonics, synchronization, voltage frequency, flicker, etc.,

2.7. Due to TANGEDCO's obligation to maintain a safe and reliable distribution system, eligible prosumer's GISS either causes damage to and / or produces adverse effects affecting other consumers or TANGEDCO's assets, eligible prosumer will have to disconnect his GISS immediately from the distribution system upon direction from the TANGEDCO and correct the problem at his own expense prior to a reconnection.

2.8. Both parties of this agreement are mandated by the Tamil Nadu Electricity Regulatory Commission's (Grid interactive Solar PV Energy Generating Systems) Regulation, 2021 and all relevant regulations, codes, and orders of the Tamil Nadu Electricity Regulatory Commission.

3. Clearances and Approvals:

3.1 The Eligible prosumer agrees to obtain all the necessary approvals and clearances (environmental and grid connected related) before connecting the GISS to the distribution system.

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4. Access and Disconnection:

4.1. TANGEDCO shall have access to metering equipment and disconnecting devices of GISS, both automatic and manual, at all times.

4.2. In emergency or outage situation, where there is no access to a disconnecting means, both automatic and manual, such as switch or breaker, TANGEDCO may disconnect services to the premises.

4.3. Upon termination of this agreement the Eligible prosumer shall disconnected the solar system forthwith from the network of the TANGEDCO.

5. Liabilities:

5.1. Eligible prosumer and TANGEDCO will indemnify each other for damages or adverse effects from either party's negligence or intentional misconduct in the connection and operation of GISS or TANGEDCO's distribution system.

5.2. TANGEDCO and eligible prosumer will not be liable to each other for any loss of profits or revenues, business interruption losses, loss or contract or loss of goodwill, or for indirect, consequential, incidental, or special damages, including, but not limited to, punitive or exemplary damages, whether any of the said liability, loss or damages arise in contract, or otherwise.

5.3. TANGEDCO shall not be liable for delivery or realization by eligible prosumer for any fiscal or other incentive provided by the Central / State government beyond the scope specified by the Commission in its relevant order.

6. Commercial Settlement:

6.1. The feed-in tariff contracted to be paid by the TANGEDCO to the eligible prosumer under this agreement by ..... **Metering** mechanism is Rs..... as per the orders of the TNERC, Number .....dated:.....

6.2. Metering System, Billing and all other charges and the commercial settlement under this agreement shall be as per the regulations / codes / orders of TNERC amended from time to time.

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6.3. TANGEDCO shall not be liable to compensate the eligible prosumer if his solar system is unable to inject power into TANGEDCO's network on account of failure of power supply in the grid.

7. Connection Costs:

7.1. The eligible prosumer shall bear all costs related to setting up of photovoltaic system including metering and interconnection and infrastructure for power evacuation costs.

7.2. The eligible prosumer agrees to pay the actual cost of modifications and upgrades to the service line /power evacuation line required to connect GISS in case it is required.

7.3. In case of gross metering arrangement, the eligible Prosumer shall bear entire cost of erection and maintenance of separate service line to be laid to evacuate its total generated power into the grid.

8. Period of Agreement and Termination:

8.1. This agreement shall be for a period of twenty-five years but may be terminated prematurely by mutual consent.

8.2. The eligible prosumer can terminate agreement at any time by providing TANGEDCO with 90 days prior notice.

8.3. TANGEDCO has the right to terminate agreement on 30 days prior written notice if eligible prosumer breaches a term of this agreement and does not remedy the breach within 30 days of receiving written notice from TANGEDCO of the breach.

8.4. TANGEDCO has the right to terminate agreement after giving 15 days' notice in case the eligible prosumer fails to pay his dues in a timely manner or indulges in any malpractices.

8.5. Eligible prosumer agrees that upon termination of this agreement, he must disconnect the GISS from TANGEDCO's distribution system in a timely manner and to TANGEDCO's satisfaction.

SUPERINTENDING ENGINEER
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Ph: 2441 1656 / 2441 6474

In the witness, whereof of Mr. N. GOPALAN on behalf of **M/s.SHRI SIVASUBRAMANIYA NADAR EDUCATIONAL AND CHARITABLE TRUST, Old Mahabalipuram Road, Kalavakkam-603110,** Eligible prosumer and Mr. P. ARUNACHALAM, M.Tech, M.I.E on behalf of **Chengalpattu Electricity Distribution circle TANGEDCO** sign this agreement in two originals.

SUPERINTENDING ENGINEER
CEDC / TANGEDCO / Chengalpattu
SUPERINTENDING ENGINEER,

N. Gopalan
Administrative Officer
SSN College of Engineering
New No: 19, Old No: 8,
3rd Main Road, Kasthuribai Nagar,
Adyar, Chennai - 600 020.
Ph: 044-1658 / 2441 6474
AUTHORISED SIGNATORY

Signed in the presence of

1.
ASSISTANT EXECUTIVE ENGINEER
Public Relation Officer cum Development
2. CEDC/TANGEDCO/Chengalpattu

2. AE/Development

1. (R. JAYAKUMAR - Cell: 9962549469)

2. J. Anto Shebin
9003287608

SSN COLLEGE OF ENGINEERING KALAVAKKAM

SOLAR GENERATION REMOTE MONITERING SHEET,TANGETCO CONSUMPTION AND POWER FACTOR.(EVERY DAY MORNING 6.00AM STAUS)FOR THE MONTH OF JULY-2024

SL NO	DESCRIPTION	01-Jul	02-Jul	03-Jul	04-Jul	05-Jul	06-Jul	07-Jul	08-Jul	09-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	TOTAL
1	**ECE -150 KW**	409	702	642	484	643	213	598	436	412	699	416	648	395	287	225	354	546	291	180	549	621	351	527	647	592	533	561	493	577	682	336	14713
2	**CSE-50KW**	155	174	168	118	164	56	147	113	107	173	107	162	0	85	56	92	138	75	95	142	161	36	127	173	178	161	173	166	179	205	187	3886
3	**IT-50KW**	123	219	204	147	198	65	176	132	123	215	123	200	123	85	68	112	166	86	110	166	190	105	183	200	184	165	172	162	178	213	194	4593
4	**CDC-50KW**	147	252	235	172	227	80	204	159	150	274	151	234	146	104	82	113	195	106	133	197	223	123	210	231	216	195	200	191	208	246	228	5404
5	**BME- 150KW**	433	745	712	508	680	258	601	461	442	738	433	708	430	308	244	388	572	312	395	584	663	378	619	662	640	579	592	568	616	735	679	16004
6	**EEE-150KW**	431	748	715	509	690	253	598	461	439	746	443	578	316	304	240	384	574	308	393	583	646	373	620	663	642	578	591	565	614	738	675	15743
8	**HUMANITIES-50KW**	148	256	241	175	236	63	0	152	151	255	152	248	147	104	82	134	199	106	134	198	227	128	215	235	220	198	202	193	212	254	232	5265
9	**SSN SOM block 100 kw**	220	348	334	253	336	126	293	230	212	340	216	317	214	150	120	187	295	152	192	288	292	184	291	315	313	267	287	268	296	356	310	7692
10	**CSE ANNEX - 100KW**	297	513	492	349	465	176	416	317	301	507	304	488	296	210	165	268	398	213	271	400	459	260	427	472	440	400	408	390	424	504	465	11030
11	**CSE BLOCK NEW (100 KW)**	283	466	425	332	423	152	334	297	282	398	285	392	268	203	161	223	170	206	83	316	285	242	313	404	372	353	364	232	395	440	419	9099
12	ECE WW NEW (100KW)	296	495	460	347	462	156	402	319	297	486	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4020
13	**IT NEW (100KW)**	282	461	430	305	404	145	350	286	272	424	274	409	262	188	148	226	354	191	238	349	342	224	366	398	388	341	356	330	364	442	392	9549
14	**LIBRARY NEW (100KW)**	232	315	300	244	290	145	288	244	258	308	249	309	239	188	150	217	264	192	238	289	311	224	288	294	276	288	280	282	289	292	313	7783
15	**ECE ANNEX NEW (50KW)**	129	222	207	151	203	77	279	139	133	217	132	214	128	91	72	116	170	89	115	172	197	111	186	202	190	173	176	170	184	219	202	4864
16	**TOTAL SOLAR GENERATION- IN LAST 24 HOURSE- KWH**	3585	5916	4551	4094	5421	1965	4686	3746	3579	5780	3585	4907	2964	2307	1813	2814	4041	2327	2577	4233	4617	2739	4372	4896	4651	4231	4362	4010	4536	5326	4632	118631
17	**solar generation /kw/day**	2.76	4.55	3.50	3.15	4.17	1.51	3.60	2.88	2.75	4.45	2.76	3.77	2.28	1.77	1.39	2.16	3.11	1.79	1.98	3.26	3.55	2.11	3.64	4.08	3.88	3.53	3.64	3.34	3.78	4.44	3.86	3.19

18	**SS -1 TANGETCO CONSUMPTION**	6708	6174	6525	6400	5313	4067	4514	4867	2665	4565	5066	4234	3466	2473	4440	3937	3688	4398	3842	2221	2302	5489	5072	5515		4505	4035	3015	7227	6420	6966	116481
19	**SS -2 TANGETCO CONSUMPTION**	7871	6483	6692	6614	6320	6033	6317	6748	4726	6454	6507	5915	6058	4596	5632	5074	4542	5090	3712	3668	3618	6365	6085	6164		5612	5232	4801	7509	7217	7601	148128

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SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGINEERING

(An Autonomous Institution)
Kalavakkam – 603 110

OPERATIONS

5.4 Percentage of electricity from on-site or certified renewable sources

Submitted to

The Sustainability Tracking, Assessment & Rating System (STARS)

5.4 Percentage of electricity from on-site or certified renewable sources

- URL to energy management plans, energy consumption data, or efficiency improvement reports.

  https://www.ssn.edu.in/wp-content/uploads/2024/02/7.1.6_ENERGY-AUDIT-REPORT-SSN-23.06.2022.pdf

ENERGY AUDIT REPORT - 2022

SSN COLLEGE OF ENGINEERING, KALAVAKKAM

PREPARED BY

WASMANPRO ENVIRONMENTAL SOLUTIONS LLP

SSN COLLEGE OF ENGINEERING
Rajiv Gandhi Salai (OMR) Kalavakkam, Tamil Nadu, India

EXECUTIVE SUMMARY

Energy, particularly electrical energy is crucial to human sustenance and development. Due to the increasing demand for electrical energy, day by day the gap between the demand and supply is widening. The only achievable way to handle this crisis is the efficient utilization of available electrical energy and making use of the renewable source of energy to supplement the energy requirement. Efficient utilization of electrical energy is only possible by persistently monitoring and controlling the use of electricity by conducting energy audits.

An Energy audit of an Educational Institution is a process for collection of primary and secondary data, conducting walk through inspection, building and equipment's survey and analysis of energy flow into a building and Testing equipment's in the labs, utilities, analysis of methods for energy conservation in a building, and arrive at methods to reduce the amount of energy input into the building without affecting the output of the building. During the audit it was observed that SSN College exerted a load of 28,15,512 kWh during the period of Dec 2020 to Dec 2021. It was observed that the Institution met its power requirement from three sources and it was not entirely dependent on TANGEDCO for power requirement. Out of 28,15,512 kWh, the solar power systems generated power around 7,60,135 kWh and 37,224 kWh was generated by the DG sets, from TANGEDCO 20,18,153 kWh was taken.

This energy audit report seeks to augment energy use awareness, estimate any wastage with the use of appliances and encourage energy conservation practices in SSN College. This audit report also seeks to suggest potential energy savings alternatives for light equipment, air-conditioners (AC) and computers which are widely used on the college campus with an aim of improving the efficient utilization of energy meanwhile maintaining the productivity and general well-being of students and Lecturers.

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CHAPTER 1

INTRODUCTION

1.1. ABOUT SSN

SSN Institutions, established by Dr. ShivNadar, Founder Chairman of HCL Technologies, stand out as a premier centre of higher learning with a mission of pursuing excellence in education and research. The institutions, with their diverse and dynamic community of students offer a distinctive combination of some of the finest graduate, undergraduate and research programs, accomplished faculty, world class facilities and a residential campus set on a sprawling 230 acres of sylvan surroundings.

The Institutions provide a variety of stimulating environments for intellectual development, free thinking, and personal growth, challenging its students with dynamic learning opportunities and equipping them with the skills, insights, attitudes and practical experiences that are necessary to take up responsibilities in the society. SSN is a home to aesthetically-designed buildings with state of the-art computer and internet facilities, modern workshops, seminar halls, auditoriums and well-stocked libraries, sports and games fields in addition to an indoor stadium with gymnasium.

SSN aims at more than mere academic excellence and offers its students, the widest possible scope and opportunity for academic exploration and all-round growth. A blend of co-curricular and extra-curricular activities is organized that ensures that each student gets adequate opportunities to display his or her varied skill sets and latent talents. SSN aims to nurture qualities like leadership, kinship, discipline, organizational skills and the ability to manage diverse opinions, thoughts and points of view among its students.

Apart from involving in this mission towards excellence, SSN keeps its vision constantly on public service and the fulfilment of the confidence that society lays. SSN strives to provide a unique setting for stimulating creative thoughts which ensure that every student who graduates from its portals scores high in public-spiritedness and remains committed to the society concerned. Compassion, humaneness and commitment to every section of the society are hallmarks of the brains that get trained at SSN.

Figure 1: SSN College of Engineering

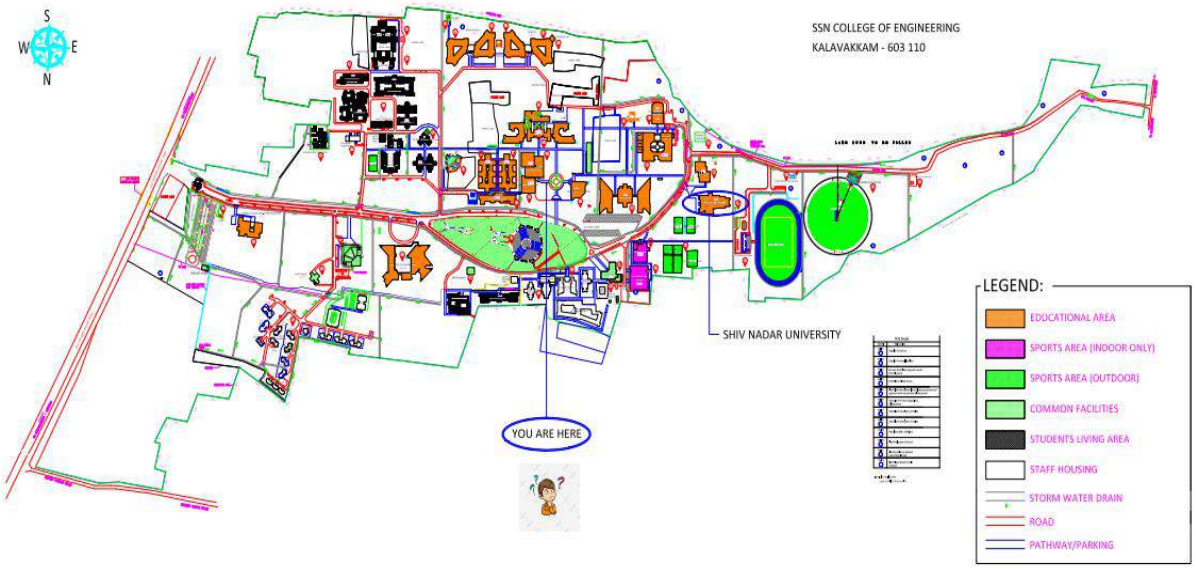


Figure 2: Layout Plan of The Campus

BUILDING NUMBER	BUILDING NAME	BUILDING NUMBER	BUILDING NAME	BUILDING NUMBER	BUILDING NAME	BUILDING NUMBER	BUILDING NAME	BUILDING NUMBER	BUILDING NAME
01	TEMPLE	11	GENTS HOSTEL - I TO VI	21	RESEARCH LAB	31	PARENTS WAITING HALL FOR	41	CORE LAB FOR PHYSICS & CHEMISTRY
02	SCHOOL OF ADVANCED	12	PG GENTS DINING HALL	22	ELECTRONICS & COMMUNICATION		LADIES HOSTELS	42	OUTDOOR GAMES
	AND CAREER EDUCATION	13	OPEN AIR THEATRE		ENGINEERING ANNEXURE BLOCK	32	ADMINISTRATION BLOCK	43	PRIMARY SUBSTATION
03	GUEST HOUSE	14	SCHOOL OF MANAGEMENT	23	ELECTRONICS & COMMUNICATION	33	INNOVATION/INCUBATION	44	HUMANITIES BLOCK
04	STAFF QUARTERS	15	SSN NURSERY	24	COMPUTER SCIENCE ENGINEERING		CENTRE	45	ACADEMIC BLOCK-1 FOR
05	MAIN AUDITORIUM	16	SSN CREST	25	INFORMATION TECHNOLOGY	34	MECHANICAL ENGINEERING		SHIV NADAR UNIVERSITY
06	SEWAGE TREATMENT	17	BIO MEDICAL ENGINEERING	26	COMPUTER SCIENCE ENGINEERING	35	CANTEEN	46	FOOT BALL GROUND WITH PAVILION
	PLANT	18	CHEMICAL ENGINEERING		ANNEXURE BLOCK	36	OVER HEAD WATER TANK & UG SUMP	47	STORE CUM TOILET
07	SECONDARY SUBSTATION	19	ELECTRICAL & ELECTRONICS	27	LIBRARY & COMPUTER CENTRE	37	SPORTS COMPLEX ANNEXURE	48	CRICKET GROUND WITH PAVILION
08	UG GENTS DINING HALL		ENGINEERING - EAST WING	28	CAREER DEVELOPMENT CENTRE	38	SPORTS COMPLEX	49	ORGANIC WASTE COMPOSTER YARD
09	INTERNATIONAL HOSTEL	20	ELECTRICAL & ELECTRONICS	29	VAMA SUNDARI PARK & ICONIC TOWER	39	WORKSHOP BLOCK		
10	PG GENTS HOSTEL-VII		ENGINEERING, SSNRC & CIVIL	30	LADIES HOSTEL - I TO VI	40	MINI AUDITORIUM		

1.1.1. Vision of the Institute

SSN institute envisions “To be a world class institution for technical education and scientific research for the public good.”

1.1.2. Mission of the Institute

SSN will strive continuously to:

- Make a positive difference in society through education.
- Empower students from across socio economic strata.
- Be a center of excellence in education in emerging technologies in accordance with industry and industrial trends.
- Build world class research capabilities on par with the finest in the world and broaden students’ horizons beyond classroom education.
- Nurture talent and entrepreneurship and enable all-round personality development in students.

1.1.3. Objectives of the Institution

The Institution aims to impart world-class technical knowledge and training to meritorious students from diverse socio-economic backgrounds and to transform their lives by nurturing their talent and facilitating all-round personality development.

1.1.4. Environmental Policy of the Institution

SSN's environmental policy is intended

- To create awareness among faculty and students on the three pillars of sustainable development (Economic, Environmental and Social), conservation of natural resources and environment regulations.
- To enable faculty and students to develop environmental friendly technologies and engineering designs leading to circular economy.
- To help the faculty and students to develop conservation-oriented attitude and to concentrate in the development of rural population.
- To incorporate eco-friendly practices such as Reduce, Reuse and Recycle, in each institutional activity
- To train the students to adopt fair, ethical and environment friendly approach and make them as responsible citizen of this biosphere.

1.2. ABOUT WASMANPRO ENVIRONMENTAL SOLUTIONS LLP

WasmanPro has in-depth understanding and practical experience with Environmental and Energy Audit, Green Practices, Environmental Policies, Regulatory Programs, and Remediation Strategies. The firm offers comprehensive regulatory consent and compliance support that address a full spectrum of air, water, wastewater and hazardous waste issues, regulations, and policies. Drawing up on the collective experience of the team, it has developed technically sound and cost-effective strategies to achieve environmental compliance. The development and implementation of these strategies have led to:

- Faster Consent Management Services
- Reducing waste streams
- Improving mechanisms to track consent conditions
- Executing effective monitoring programs
- Implementing phased compliance and cleanup strategies

1.2.1. Core Environmental Compliance & Remediation Services

WasmanPro helps clients in adopting advanced environmental sustainability, maintain environmental compliance, and reduce environmental risk and cleanup sites by providing a diverse set of core services including:

- Environmental Compliance
- Air Emission Inventories and Reporting
- Air Quality and Clean Air Act Compliance
- Environmental Due Diligence
- Environmental Impact Assessment
- Site Investigation and Feasibility Studies
- EHS Audits & Training
- Environmental Management System and Compliance Auditing
- Environmental Monitoring
- Ground water and Sub surface Investigations
- Green Audit
- Soil Management Plans
- Hazardous and Solid Waste Management Plans
- Remedial Design and Monitoring
- Brown field Cleanup
- Pollution Prevention Plans
- Environmental, Health and Safety Plans
- Hydro geological studies

M/S WasmanPro Environmental Solutions LLP has also undertaken several Environmental and Energy Audits as per NAAC requirements.

1.2.2. WasmanPro Team

M/S WasmanPro Environmental Solutions LLP is spearheaded by Dr. K. Karthikeyan, a certified Lead Auditor for ISO 14001, OSHA 18001 certified by CII-NABET certification program.

Dr. Karthikeyan was former Member Secretary of TNPCB and has vast experience in the field of Environmental Impact Assessment (EIA), Marine Impact Assessment (MIA), Solid Waste Management (SWM), Environmental and Social Management Framework (ESMF), Disaster Management Plan (DMP), Risk Assessment, Water and Wastewater treatment, Training of Engineers. The Company is also lead by senior retired professionals like G. Sathiamoorthi, Former Engineering Director, Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB). WasmanPro has several talented & committed employees as engineers and scientists across multiple sectors.

CHAPTER 2
ENERGY AUDIT

2.1. INTRODUCTION

Energy is one of the major inputs for the economic development of a country. Energy saving constitutes a primary measure for the protection of the environment. The need for energy saving is quite evident in the institutional buildings, where the use of Electro-mechanical and other electrical equipment's along with lighting and cooling system consumes the major portion of energy.

Now-a-days, almost all the activities in an educational institution is wholly if not partly dependent upon the use of electricity. So, electricity plays important role and serves as the essential ingredient for the educational institutions. Energy Audit is the key to a systematic approach for decision-making in the area of energy management in an educational institution.

Energy audit will determine energy wastage and losses, and provide techniques and ways to minimize the losses. It attempts to balance the total energy inputs with its use, and serves to identify all the energy streams in a facility along with suggestive measures to minimize the losses. Energy Management will help to achieve and

maintain optimum energy procurement and utilization, throughout the institution so as to minimize energy costs and wastage without affecting production and quality.

Hence conducting an energy audit in an educational institution is imperative as the Energy Audit helps in systematic, documented, periodic and objective evaluation of how well an organization is performing with the aim of conserving its energy and thereby helping to safeguard the environment by facilitating management control.

2.2. METHODOLOGY FOR ENVIRONMENTAL AND ENERGY AUDITING

An energy audit is an inspection, survey and analysis of energy flows for identification of energy savings opportunities in a building, process or system to reduce the amount of energy input into the system, without negatively affecting the output.

The energy audit process has three distinct phases:

- Phase 1: Pre-Audit Stage- Preparation & Pre-analysis, and
- Phase 2: Audit Stage-Site Visit and detailed Audit
- Phase 3: Post Audit Stage-Report Making and Periodic Review and Follow-up

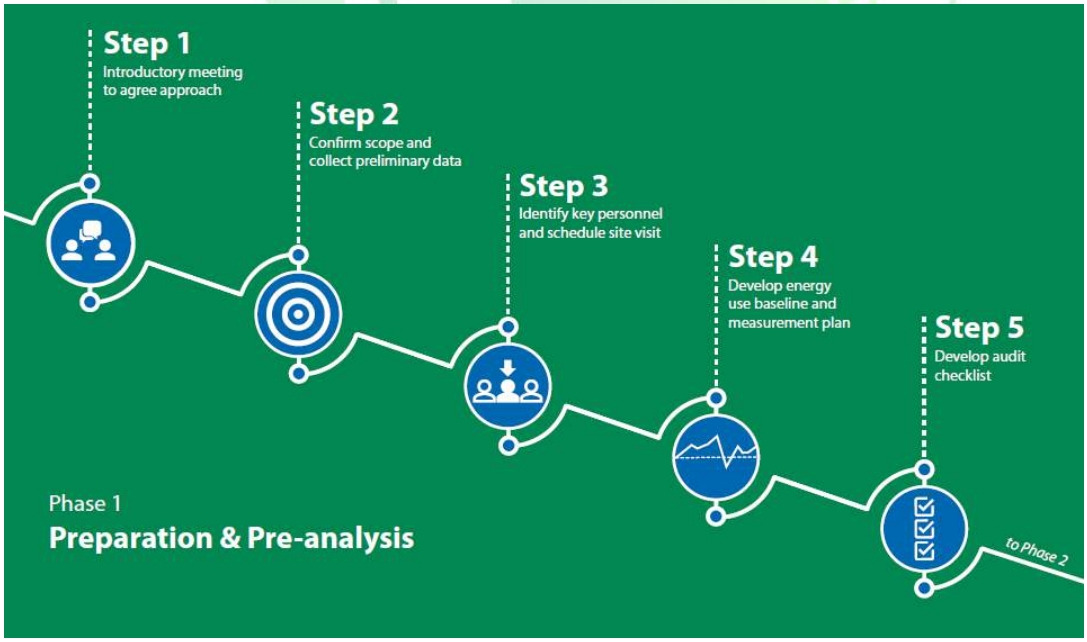
The audit conducted by WasmanPro Environmental Solutions LLP involved basic design data collection for various electrical & thermal utilities, holding meeting with concern departmental officials & managers, carrying out various field measurements, performance analysis and loss analysis covering all major energy consuming sections of SSN College, to assess losses mainly in energy consuming utility areas and to arrive at potential for energy savings.

Detailed analysis of data collected was done. It included calculation of energy consumption, analysis of latest electricity bill of the campus, understanding the tariff plan, analysis of various power saving methods implemented in the campus, analysis of any clean or green source of energy in the campus to substitute the conventional source of power.

On the basis of results of data analysis and observations, various suggestions that the Institution can implement were recommended.

The major areas of study of our audit team included:

- Building energy bills analysis.
- Electrical supply and distribution system analysis
- Lighting system analysis.
- Air conditioning system analysis.
- Water pumping system analysis.
- Buildings envelop analysis.
- Specific Energy Consumption Areas



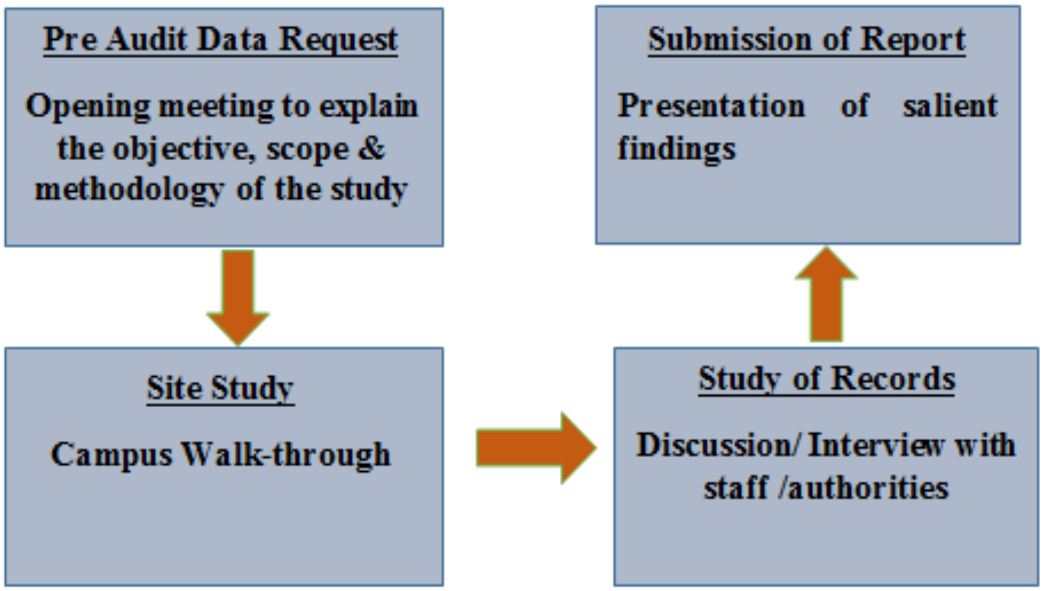


Figure 3: Stages of Auditing

2.3. BENEFITS OF THE ENERGY AUDITING

- To improve energy performance and minimize the environmental impacts of the organization's operations.
- To identify behavioral change opportunities by evaluating current operations and maintenance practices.
- To identify technical opportunities for conserving energy by evaluating significant process energy-using components or utilities
- To provide clear financial information regarding energy savings opportunities in order to prioritize these items for the organization's decision-making process.
- To gain a greater understanding of a part or all of the organization's energy usage patterns.
- To identify potential for using renewable energy supply technologies.
- To inform a strategic plan aimed at minimizing the organization's carbon footprint.

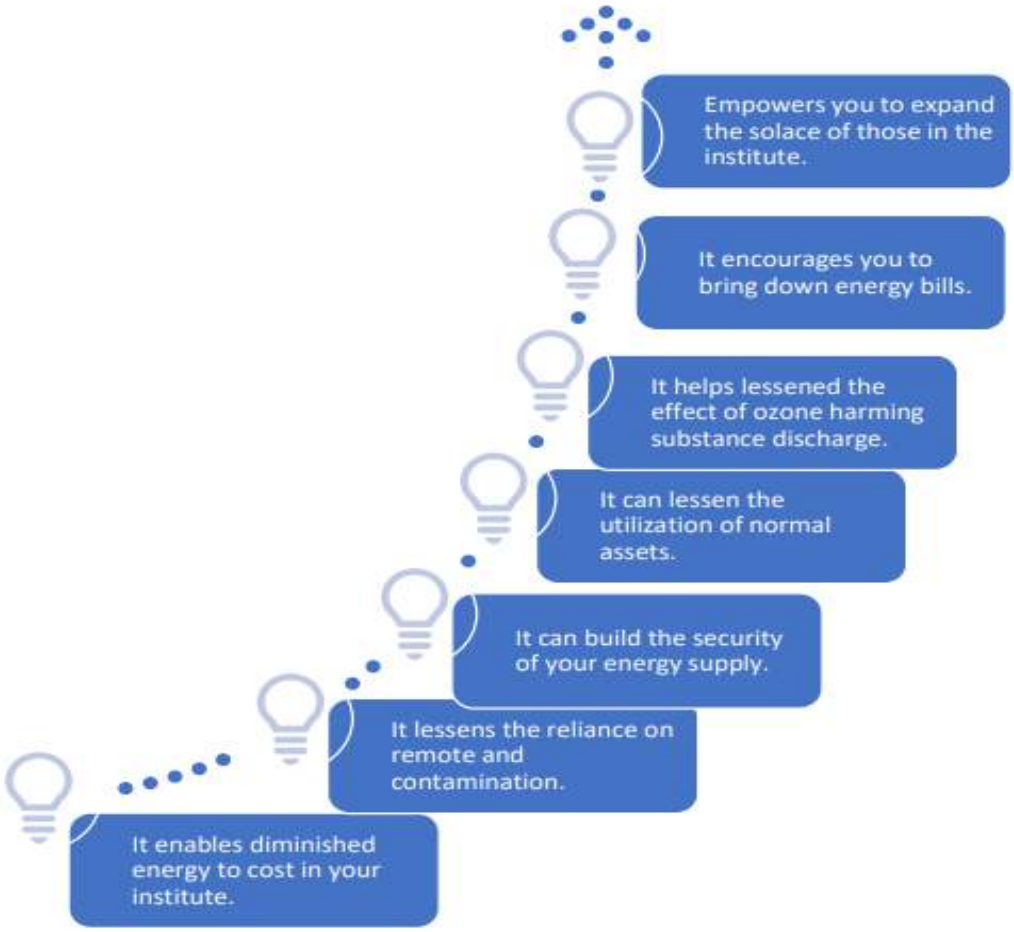


Figure 4: Benefits of the Energy Auditing

2.4. SCOPE AND GOALS OF ENERGY AUDITING

Natural resources on earth are limited and today energy conservation plays a very important role for conserving energy because energy consumption is increasing day by day but the natural resources are not increasing and also generation is not match with consumption. An effective way of addressing this issue in an educational institution is by conducting systematic Energy audit. Energy audit can be considered as an internal examination and will help to improve existing activities, with the aim of energy efficiency and resource conservation.

A very simple indigenized system has been devised to monitor the energy performance of SSN College. It comes with a series of questions to be answered on a regular basis and walk thorough survey and site inspection.

This innovative scheme is user friendly and totally voluntary. The aim of this is to help the Institution, identify their weak areas, and project their best practices and to set examples for the community, and to educate the young learners.

Energy Auditing was done in three phases in SSN College

Phase I - Pre-Audit Stage

Phase II - Audit Stage

Phase III - Post Audit Stage

1. **Pre-Audit Stage**
   - Pre-Audit meeting
   - Macro data collection
   - Pre-Analysis and Planning
   - Walk through Audit
   - First hand observation and assessment
   - Issue survey Questions
2. **Audit Stage**
   - Conducting Site Visit
   - Standard Audit
   - Analysis of current and past performance
     - Analysis of Annual Energy Bill
     - Analysis of energy consumption pattern
     - Identification of energy conservation opportunities
   - Selection of most promising techniques
   - Cost benefit analysis
3. **Post Audit Stage**
   - Implementation of ideas
   - Follow up and periodic review

2.5. PRE-AUDIT STAGE

Phase 1 -Pre-Audit Stage- Preparation and Pre-Analysis

Pre-Audit meeting

A pre-audit meeting provides an opportunity to reinforce the scope and objectives of the audit and to discuss on the practicalities associated with the audit.

This meeting is an important prerequisite for the Energy Audit because it is the first opportunity to meet the expert and deal with any concerns.

The introductory meeting was conducted on 10.01.2022 between WasmanPro Officials and officials of SSN College. This introductory meeting was done to confirm the scope of audit; and to request specific energy information and other relevant data needed to carry out the audit, from the organisation.

This information is very much important to analyse the institutions current energy use and to assess its energy management system.

The introductory meeting was followed by approach finalization by WasmanPro team. Preparation and planning are key to ensuring that an effective and proportionate audit is conducted.

Once the rationale for carrying out an energy audit was established with the client; the scope, level of analysis and the boundaries of the audit was discussed and finalized by WasmanPro and SSN College.

The approach finalized for energy audit included analysing energy consumption in electrical equipment used in the campus, along with energy consumption in various department, process, building, hostels, canteen, indoor court, outdoor court etc.

Figure 5: SSN Officials and WasmanPro Officials during Energy-Audit held on 10th Jan 2022

Macro data collection

During this phase exhaustive data collection was performed by the team using different tools such as observation, conducting surveys, distributing questionnaires, communicating with responsible persons/officials.

The data requested included the following:

- Electricity bills, other fuel bills of the past months or access to online billing data.
- The energy billing information should span a minimum of one year but ideally should include the previous three years.
- Information about any Energy monitoring software being used, if so the data and along with the copies of building layout drawings, instrumentation diagram/drawings, site plans, equipment or machinery lists, process diagrams, and activity details of the campus.
- Data on previous energy audits.
- Information about Electrical supply and presence of any renewable source of energy used in the campus
- Information about Lighting system, Air conditioning system, Water pumping system, any other Specific Energy Consumption

The team identified few key personnel, from whom information could be gained about energy consumption details of the college. Team took effort to understand the roles and responsibilities of these key personnel with respect to energy management, and involved their participation in the audit process. The team analysed the main areas of energy consumption, along with each departments' operational practices and behaviours.

Pre-Analysis and Planning

Preliminary analysis of relevant data provided by the institution was carried out by the team as it would help in carrying out more effective site work and reduce the time required to complete the on-site audit of the campus. Preliminary analysis gave an insight into the potential areas for further investigation. It also helped in developing a list of potential energy conservation measures (ECMs) and operation and maintenance (O&M) procedures to be followed in the institute.

Preliminary analysis carried out by the audit team helped in getting to know basic aspects of the building and helped in pinpointing the area with spikes in energy use.

In preliminary analysis of the data helped to identify the nature and quantity of energy consumption; the major energy consuming equipment that need to be closely examined during the site visit and the requirements for any temporary metering or spot metering. In

addition, analysis of the supplied data helped in making the audit checklist and the site visit agenda.

Energy billing data analysis

During the preliminary analysis past bills were collected and reviewed to analyse the energy utility data. A detailed analysis was done to find any variations in seasonal patterns, unusual spikes, and to check the accuracy of the billings.

The auditor's initial review of energy bills helped in determining any unnecessary usage or wastage of electricity was happening or if any extra charges have been incurred. Analysis of energy bill also helped to understand the trends in consumption patterns of the college.

Monthly electricity load profile over a period of one year was analysed and efforts were put in to find if there was any significant peak in electrical consumption during the period, and efforts were taken to find out the reason for such an increase.

Walk-through Audit

The walk-through audit was done by WasmanPro Environmental Solutions LLP Team, a tour of the entire institution was carried out visually, observing each of the energy utilizing systems. The walk-through audit yielded a preliminary estimate of energy saving potential in the campus and the team came up with a list of low-cost savings opportunities through improvements in operational and maintenance practices followed in the campus. This audit was an opportunity to collect information for a more detailed audit later on.

Preparation of Audit Checklist and Issuing of Survey Questions

Based on the preliminary data analysis and walk through audit survey a detailed set of questionnaires was prepared by the team.

The team went to each department, Library, canteen, hostels, research centres and distributed the questionnaire among the concerned officials in each department/ section.

The audit questionnaire was developed to obtain information about energy consumption patterns and to analyze energy use quantities and patterns of consumption.

2.6. AUDIT STAGE

Phase II-Audit Stage

In SSN College, Energy Auditing was coordinated by WasmanPro Environmental Solutions LLP.

The Methodology adopted in the Audit Stage includes the following;

- Site Visit
- Standard Audit
- Analysis of current and past performance
    - Analysis of Annual Energy Bill
    - Analysis of energy consumption pattern
    - Identification of energy conservation opportunities
- Selection of most promising techniques
- Cost-benefit analysis

Conducting the Site Visit

The site visit comprised of a detailed walk-around of the campus, with a significant emphasis on the largest energy-consuming units/equipment. It was done by WasmanPro on 10th March 2022. During the site visit assessment was done by the WasmanPro team and determined the current practice of energy consumption, the progress made towards energy conservation and energy optimization and achievements made to date to adopt renewable sources of energy to substitute and supplement conventional energy.

During the site visit focus was given to inspecting the actual systems followed on the campus and obtaining answers to specific questions generated during the pre-site review.

The Auditing conducted inspections of different facilities at the Institute, analysed the different types of electrical appliances and utilities (lights, fan, A/C, fridges, water cooler etc.) present on the campus as well as measured the usage per item (Watts indicated on the appliance) and identified the relevant consumption patterns (such as how often an appliance is used).

While conducting energy audit, few areas that were analysed by the audit team included- if the buildings had any glazing and insulation, the general lighting system followed in the campus, Heating system used in laboratories and hostels, use of heating

ventilation and air conditioning (HVAC) in the campus, Pumps used, Transport fleet used and the mode of fuel used electricity run or petrol/diesel run, Refrigerators used in the campus laboratories, campus hostel, campus kitchen etc, if there is any waste water treatment system in the campus, utilization of any Renewable energy in the campus etc.

Standard Audit

During the standard audit the team did a detailed quantification of various energy uses in the campus along with losses that was occurring was carried out. A detailed review and analysis of lighting system, equipment/machinery used, and operational characteristics was carried out.

In this audit, the audit team included a more detailed building survey and energy analysis, including a breakdown of energy use in the building, a savings and cost analysis of all practical measures.

This analysis also included some on-site measurement and few testing to quantify energy use and efficiency of various systems. Efficiencies of various systems were analysed and calculation on energy and costs savings potential based on improvements and changes to each system was arrived at. This audit also incorporated an economic analysis of recommended conservation measures.

Analyse current and past performance

A detailed analysis of information supplied by the organisation was carried out. This information was studied along the information obtained during the site visit, visual observations and metering results. This helped the audit team gain a thorough understanding of energy usage profiles across the campus. It also helped in developing a better understanding of the processes carried out and the types of technologies used in the institution. The essence of this activity was to find out how well the organization, departments and equipment/machinery are performing adhering to the concept of energy efficiency and conservation in mind.

2.7. POST AUDIT STAGE

Phase III- Post Audit Stage

The base of any Energy Auditing is that its findings are supported by documents and verifiable information. The audit process seeks, on a sampled basis, to track past actions, activities, events, and procedures to ensure that they are carried out according to systems requirements and in the correct manner.

During post audit stage, the auditor evaluated the information gathered during the site visit, and conducted a research to look into possible energy conservation opportunities.

During this stage the organized comprehensive audit report was made by the WasmanPro team with recommendations on mechanical, structural, operational and maintenance improvements aiming at energy conservation and optimum utilization of energy.

So, during the post audit stage, our team focussed on analysing the information gathered during the pre-site and on-site period. Based on these an audit report was prepared with adequate recommendations for energy saving and make the entire campus energy efficient.

2.8. FOLLOW-UP ACTION AND PLANS

Energy Audits are exercises which generate considerable quantities of valuable information. The time and effort and cost involved in this exercise is often considerable and in order to be able to justify this expenditure, it is important to ensure that the findings and recommendations of the audit are considered at the correct level within the organization and that action plans from the audit findings are implemented.

Audit follow up is part of the wider process of continuous improvement. Without follow-up, the audit becomes an isolated event which soon becomes forgotten in the pressures of organizational priorities and the passing of time.

CHAPTER 3

ENERGY AUDIT QUESTIONNAIRE/ CHECKLIST

3.1. INTRODUCTION

Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the audit. Energy Audit provides a “bench-mark" for managing energy in the Institution and also provides the basis for planning more effective use of energy throughout the Institution.

The primary objective of anEnergy Audit is to determine ways to reduce energy consu mption per unit of product output or to lower operating costs. An old incandescent bulb uses approximately 60W to 100W while an energy-efficient light-emitting diode (LED) uses only less than 10 W. Thus, Energy auditing deals with methods to reduce its consumption and conservation of energy. It is therefore essential that any environmentally responsible Institution examine its energy use practices.

3.2. KEY METHODOLOGY ADOPTED FOR ENERGY AUDIT

1. The Energy audit was focused on the study of all major energy consumption equipment and evaluation of operational efficiency of this equipment from the energy conservation point of view.
2. Base Line data were collected by distributing online questionnaires through Google form to the students and staff and also by conducting interviews among the staff.
3. A walk-through survey of the entire facility was conducted for first-hand observation and assessment of current level operation and practices
4. The walk-through survey and baseline data collection were carried out at campus.
5. Based on the above findings, the baseline data collected were analysed along with the annual Energy bill and analysis of major energy consumption patterns was carried out.

3.3. ENERGY AUDIT SURVEY/QUESTIONNAIRE

1. List the ways of energy usage in the Institution. (Electricity, electric stove, kettle, microwave, and others).
2. Are there any energy-saving methods employed in the Institution? If yes, please specify.
3. How much money does the Institution spend on energy such as electricity, gas, firewood, etc. in a month? (Record monthly)
4. The amount spent on petrol/diesel for the past year?
5. How many CFL bulbs have been installed? Mention hours of usage (Hours used/day for how many days in a month)
6. Energy used by each bulb per month? For example, 60watt bulb x 4hours x number of bulbs
7. How many LED bulbs are used in the Institution? Mention hours of usage (Hours used/day for how many days in a month)
8. Energy used by each bulb per month? (kWh).
9. How many incandescent (tungsten) bulbs have been installed? Mention hours of usage (Hours used/day for how many days in a month)
10. How many fans are installed in the Institution? Mention hours of usage (Hours used/day for how many days in a month)
11. Energy used by each fan per month? (kWh)
12. How many air conditioners are installed in the Institution? Mention hours of usage (Hours used/day, for how many days in a month)
13. Energy used by each air conditioner per month? (kWh).
14. How much electrical equipment including weighing balance is installed the Institution? Mention the use (Hours used/day for how many days in a month)
15. Energy used by each electrical equipment per month? (kWh).
16. How many computers are there in the Institution? Mention hours of usage (Hours used/day for how many days in a month)
17. Energy used by each computer per month? (kWh)
18. How many photocopiers are installed by the Institution? Mention hours of usage (Hours used/day for how many days in a month).

19. How many cooling apparatuses have been installed in the Institution? Mention hours of usage (Hours used/day for how many days in a month)
20. Energy used by each cooling apparatus per month? Mention hours of usage (Hours used/day for how many days in a month)
21. Energy used by each photocopier per month? Mention hours of usage (Hours used/day for how many days in a month)
22. How many inverters have been installed? Mention hours of usage (Hours used/day for how many days in a month)
23. Energy used by each inverter per month? (kWh)
24. How much electrical equipment's are used in different labs of the Institution? Mention hours

    of usage (Hours used/day for how many days in a month)
25. Energy used by each piece of equipment per month? (kWh)
26. How many heaters are used in the canteen of the Institution? Mention hours of usage (Hours used/day for how many days in a month).
27. Energy used by each heater per month? (kWh)
28. No. of streetlights in the Institution?
29. Energy used by each streetlight per month? (kWh)
30. No. of TV in the Institution and hostels?
31. Energy used by each TV per month? (kWh)
32. Any other item that uses energy (Please write the energy used per month) Mention hours of usage (Hours used/day for how many days in a month)
33. Any alternative energy sources/non-conventional energy sources employed/installed in the Institution? (photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.,)
34. Do you run switch off drills at Institution?
35. Are the computers and other equipment put on power-saving mode?

36. Does the machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby mode most of the time? If yes, how many hours?
37. What are the energy conservation methods adapted by the Institution?
38. How many boards are displayed for energy saving awareness?
39. How much ash is collected after burning fire wood per day in the canteen?

3.4. ENERGY AUDIT-KEY FINDINGS

List of Instruments Used

The audit team used a wide array of latest, sophisticated, portable, diagnostic and measuring instruments to support energy audit investigations and analysis. The audit study made use of various portable instruments along with plant online instrumentations, for carrying out various measurements and analysis.

The specialized instruments that were used during the energy audit included:

Following instruments were used to collect data related to energy audit:

- 3-phase power analyzer
- Lux meter
- Power Clamp meter
- Hygrometer
- Anemometer
- Measuring tape
- Ultra-sonic flow meter

Site Visit and Site Inspection

Energy audit team visited the college campus premises and collected a detailed list of all electrical equipment and appliances used in the campus.

Team visited various locations/ departments in the campus like-

- Conference hall
- Library
- Laboratory
- Sports Room
- Staff Room
- Computer Room
- Canteen
- Prayer Hall
- Common Corridor and Hall Way
- Walk Ways the campus
- Kitchen
- Various Departments
- Hostel
- Pump House
- Water Treatment Units

Audit Findings

The major energy consuming equipment installed in SSN college include- Lighting fixtures, Air conditioning system, Ceiling & Exhaust Fan, Pumps Refrigerators and laboratory equipment etc

Table 1: Connected Load

Sl. No	Connected Load	Power (kWh per day)	Major Usage Area	Connected Load (%)
1	Lighting System	1971	Hostel, Classroom, Admin Block, Labs, Canteen, Out Door, Stadium, Corridor	13.52%
2	Fan System	2742	Hostel, Classroom, Admin Block, Labs, Canteen, Out Door, Stadium, Corridor	18.89%.
3	Air Conditioning System	6352	Hostel, Classroom, Admin Block, Labs	43.77%
4	Other Appliances	3446	Computer, Printer, Xerox Machine, Gym Equipments	23.82%

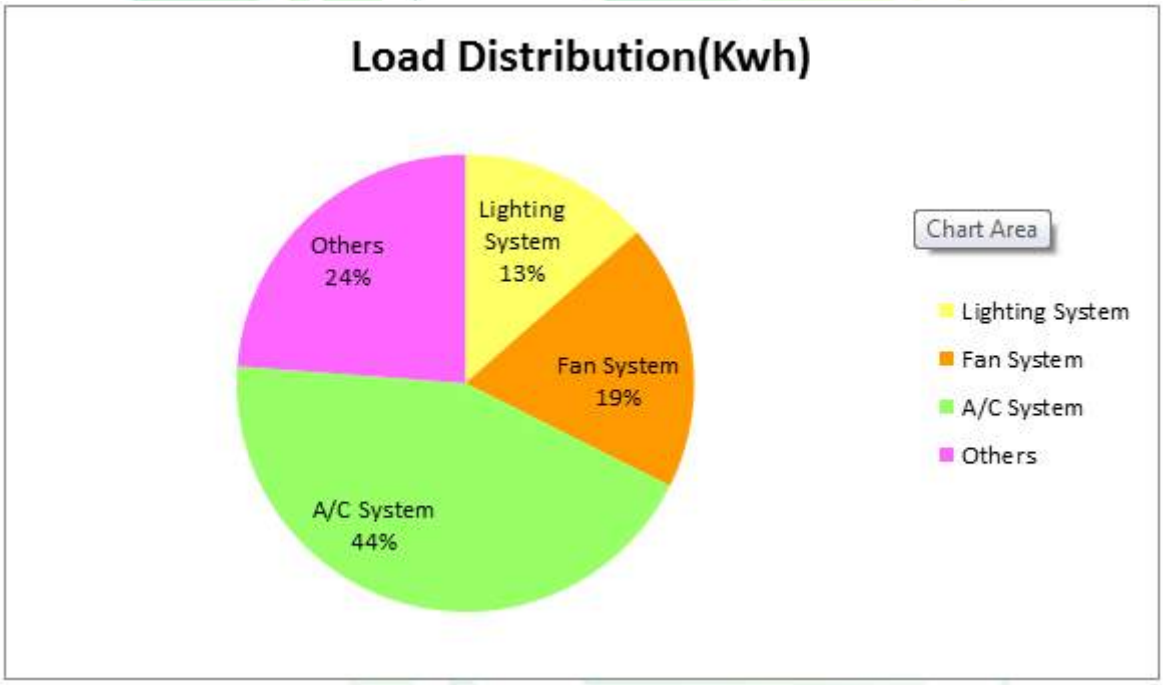


Figure 6: Pie Chart on Load Distribution

Based on the observation and analysis it was found out that A/C units were the major load exerting units. Out of total load A/C units alone put a load of 43.77%. The load applied by the lighting and fan system were just 13.52% & 18.89% respectively. Other miscellaneous equipment's like Computer, Printer, Xerox Machine, Scanner, Gym Equipment together exerted a load of just 23.82%.

As per electricity bills observation and analysis, 12-month average electricity unit (kWh) consumption is 2,22,695 kWh of this 1,60,473KWh was taken from TANGEDCO,59013 kWh was produced by solar power units for consumption,3207KWh was met by the DG sets.

Table 2: Major Utilities at SSN

Sl. No	Particular	Quantity
1	Lighting System	11285
2	Fan	4749
3	Air Conditioner	784
4	Desktop (without Monitor)	2132
5	Laptops	531
6	Gym Equipment's	8
7	WorkStation	45
8	TFT Monitor	2224
9	Scanner	19
10	Printers	134
11	Transformer	2
12	Diesel Generators	8

Note: All units were not fully utilized as usage was less due to pandemic

CHAPTER 4

ENERGY SYSTEM EVALUATION LIGHTING SYSTEM

The SSN College has high lighting load and various type of indoor and outdoor lighting fixture are installed in college campus.

All the parameters are given in the below table:

Table 3: Lighting fixture in the campus

SL NO	BLOCK NAME	TUBE LIGHT -2*36 WATTS			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
1	COMPUTER SCIENCE ENGINEERING BLOCK	125	72	4	36000
2	INFORMATION TECHNOLOGY BLOCK	156	72	4	44928
3	ECE OLD BLOCK	349	72	4	100512
4	ECE ANNEX BLOCK	0	72	4	0
5	MECHANICAL ENGINEERING BLOCK	152	72	4	43776
6	SOM BLOCK	168	72	4	48384
7	SACE BLOCK	84	72	4	24192
8	WORK SHOP BLOCK	125	72	4	36000
9	CORE LAB BLOCK	91	72	4	26208
10	EEE EAST WING	247	72	4	71136
11	EEE WEST WING	299	72	4	86112
12	CHEMICAL ENGINEERING BLOCK	198	72	4	57024
13	BIOMEDICAL ENGINEERING BLOCK	107	72	4	30816
14	HUMANITIES BLOCK	0	72	0	0
15	ADMIN BLOCK	0	72	0	0
16	LIBRARY AND COMPUTER CENTRE	159	72	4	45792
17	CARRIER DEVOLOPMENT CENTRE	0	72	0	0
18	MAIN CANTEEN	0	72	0	0
19	SUBSTATION -1	5	72	8	2880
20	SUBSTATION -2	2	72	8	1152
21	INNOVATION AND INGUBATION CENTRE	0	72	0	0
22	OLD SPORTS CENTRE	16	72	4	4608
23	CSE ANNEX	0	72	0	0
24	GH -1(DOUBLE ROOM)	0	72	0	0

SL NO	BLOCK NAME	TUBE LIGHT -2*36 WATTS			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
25	GH-2(DOUBLE ROOM)	0	72	0	0
26	GH-3(SINGLE ROOM)	0	72	0	0
27	GH-4(TRIPLE ROOM)	0	72	0	0
28	GH-5(TRIPLE ROOM)	0	72	0	0
29	GH-6(SINGLE ROOM)	0	72	0	0
30	GH-7(SINGLE ROOM)	0	72	0	0
31	GH-8(SINGLE ROOM)	0	72	0	0
32	GH -1VARANDA LIGHTS	0	72	0	0
33	GH -2 VARANDA LIGHTS	0	72	0	0
34	GH -3 VARANDA LIGHTS	0	72	0	0
35	GH -4 VARANDA LIGHTS	0	72	0	0
36	GH -5 VARANDA LIGHTS	0	72	0	0
37	GH -6 VARANDA LIGHTS	0	72	0	0
38	GH -7 VARANDA LIGHTS	0	72	0	0
39	GH -8 VARANDA LIGHTS	0	72	0	0
40	GH -4 (Stair Case Lights)	0	72	0	0
41	GH -5 (Stair Case Lights)	0	72	0	0
42	GH -6 (Stair Case Lights)	0	72	0	0
43	GH -7 (Stair Case Lights)	0	72	0	0
44	GH -8(Stair Case Lights)	0	72	0	0
45	GH -1(Toilet Lights)	0	72	0	0
46	GH -2(Toilet Lights)	0	72	0	0
47	GH -3(Toilet Lights)	0	72	0	0
48	GH -4 (Toilet Lights)	0	72	0	0
49	GH -5 (Toilet Lights)	0	72	0	0
50	GH -6 (Toilet Lights)	0	72	0	0
51	GH -7 (Toilet Lights)	0	72	0	0
52	GH -8 (Toilet Lights)	0	72	0	0
53	GH -1 (Common Room Lights)	0	72	0	0
54	GH -2 (Common Room Lights)	0	72	0	0
55	GH -3 (Common Room Lights)	0	72	0	0
56	GH -4 (Common Room Lights)	0	72	0	0
57	GH -5 (Common Room Lights)	0	72	0	0
58	GH -6 (Common Room Lights)	0	72	0	0
59	GH -7 (Common Room Lights)	0	72	0	0
60	GH -8 (Common Room Lights)	0	72	0	0
61	LH -1(DOUBLE ROOM)	0	72	0	0

SL NO	BLOCK NAME	TUBE LIGHT -2*36 WATTS			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
62	LH-2(DOUBLE ROOM)	0	72	0	0
63	LH-3(TRIPLE ROOM)	0	72	0	0
64	LH-4(DOUBLE ROOM)	0	72	0	0
65	LH-5-A (SINGLE ROOM)	0	72	0	0
66	LH-5-B (SINGLE ROOM)	0	72	0	0
67	LH-6(TRIPLE ROOM)	0	72	0	0
68	LH -1(VARANDA LIGHTS)	0	72	0	0
69	LH -2(VARANDA LIGHTS)	0	72	0	0
70	LH -3 (VARANDA LIGHTS)	0	72	0	0
71	LH -4(VARANDA LIGHTS)	0	72	0	0
72	LH -5-A- (VARANDA LIGHTS)	0	72	0	0
73	LH -5-B- (VARANDA LIGHTS)	0	72	0	0
74	LH -6 (VARANDA LIGHTS)	0	72	0	0
75	LH -1 (Stair Case Lights)	0	72	0	0
76	LH -2 (Stair Case Lights)	0	72	0	0
77	LH -3 (Stair Case Lights)	0	72	0	0
78	LH -4 (Stair Case Lights)	0	72	0	0
79	LH -5-A (Stair Case Lights)	0	72	0	0
80	LH -5-B (Stair Case Lights)	0	72	0	0
81	LH -6 (Stair Case Lights)	0	72	0	0
82	LH -1 (Toilet Lights)	0	72	0	0
83	LH -2 (Toilet Lights)	0	72	0	0
84	LH -3 (Toilet Lights)	0	72	0	0
85	LH -4 (Toilet Lights)	0	72	0	0
86	LH -5-A (Toilet Lights)	0	72	0	0
87	LH -5-B (Toilet Lights)	0	72	0	0
88	LH -6 (Toilet Lights)	0	72	0	0
89	LH -1 (Common Room Lights)	0	72	0	0
90	LH -2 (Common Room Lights)	0	72	0	0
91	LH -3 (Common Room Lights)	0	72	0	0
92	LH -4 (Common Room Lights)	0	72	0	0
93	LH -5-A (Common Room Lights)	0	72	0	0
94	LH -5-B (Common Room Lights)	0	72	0	0
95	LH -6 (Common Room Lights)	0	72	0	0
	TOTAL FITTINGS	**2283**			**659520**

SL NO	BLOCK NAME	TUBE LIGHT 1*36 watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
1	COMPUTER SCIENCE ENGINEERING BLOCK	13	36	4	1872
2	INFORMATION TECHNOLOGY BLOCK	172	36	4	24768
3	ECE OLD BLOCK	52	36	4	7488
4	ECE ANNEX BLOCK	0	36	0	0
5	MECHANICAL ENGINEERING BLOCK	34	36	4	4896
6	SOM BLOCK	23	36	4	3312
7	SACE BLOCK	172	36	4	24768
8	WORK SHOP BLOCK	13	36	4	1872
9	CORE LAB BLOCK	18	36	4	2592
10	EEE EAST WING	102	36	4	14688
11	EEE WEST WING	91	36	4	13104
12	CHEMICAL ENGINEERING BLOCK	87	36	4	12528
13	BIOMEDICAL ENGINEERING BLOCK	138	36	4	19872
14	HUMANITIES BLOCK	172	36	4	24768
15	ADMIN BLOCK	0	36	0	0
16	LIBRARY AND COMPUTER CENTRE	106	36	4	15264
17	CARRIER DEVOLOPMENT CENTRE	0	36	0	0
18	MAIN CANTEEN	117	36	6	25272
19	SUBSTATION -1	8	36	8	2304
20	SUBSTATION -2	4	36	8	1152
21	INNOVATION AND INGUBATION CENTRE	9	36	4	1296
22	OLD SPORTS CENTRE	22	36	4	3168
23	CSE ANNEX	0	36	0	0
24	GH -1(DOUBLE ROOM)	224	36	6	48384
25	GH-2(DOUBLE ROOM)	192	36	6	41472
26	GH-3(SINGLE ROOM)	75	36	6	16200
27	GH-4(TRIPLE ROOM)	192	36	6	41472
28	GH-5(TRIPLE ROOM)	368	36	6	79488
29	GH-6(SINGLE ROOM)	252	36	6	54432
30	GH-7(SINGLE ROOM)	0	36	0	0
31	GH-8(SINGLE ROOM)	0	36	0	0
32	GH -1VARANDA LIGHTS	60	36	6	12960
33	GH -2 VARANDA LIGHTS	0	36	0	0

SL NO	BLOCK NAME	TUBE LIGHT 1*36 watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
34	GH -3 VARANDA LIGHTS	0	36	0	0
35	GH -4 VARANDA LIGHTS	0	36	0	0
36	GH -5 VARANDA LIGHTS	100	36	6	21600
37	GH -6 VARANDA LIGHTS	0	36	0	0
38	GH -7 VARANDA LIGHTS	0	36	0	0
39	GH -8 VARANDA LIGHTS	0	36	0	0
40	GH -4 (Stair Case Lights)	0	36	0	0
41	GH -5 (Stair Case Lights)	64	36	6	13824
42	GH -6 (Stair Case Lights)	48	36	6	10368
43	GH -7 (Stair Case Lights)	0	36	0	0
44	GH -8(Stair Case Lights)	0	36	0	0
45	GH -1(Toilet Lights)	0	36	0	0
46	GH -2(Toilet Lights)	0	36	0	0
47	GH -3(Toilet Lights)	0	36	0	0
48	GH -4 (Toilet Lights)	0	36	0	0
49	GH -5 (Toilet Lights)	128	36	4	18432
50	GH -6 (Toilet Lights)	48	36	4	6912
51	GH -7 (Toilet Lights)	0	36	0	0
52	GH -8 (Toilet Lights)	0	36	0	0
53	GH -1 (Common Room Lights)	12	36	4	1728
54	GH -2 (Common Room Lights)	16	36	4	2304
55	GH -3 (Common Room Lights)	8	36	4	1152
56	GH -4 (Common Room Lights)	6	36	4	864
57	GH -5 (Common Room Lights)	32	36	4	4608
58	GH -6 (Common Room Lights)	18	36	4	2592
59	GH -7 (Common Room Lights)	0	36	0	0
60	GH -8 (Common Room Lights)	0	36	0	0
61	LH -1(DOUBLE ROOM)	160	36	6	34560
62	LH-2(DOUBLE ROOM)	48	36	6	10368
63	LH-3(TRIPLE ROOM)	93	36	6	20088
64	LH-4(DOUBLE ROOM)	194	36	6	41904
65	LH-5-A(SINGLE ROOM)	0	36	0	0
66	LH-5-B(SINGLE ROOM)	0	36	0	0
67	LH-6(TRIPLE ROOM)	0	36	0	0
68	LH -1(VARANDA LIGHTS)	56	36	6	12096
69	LH -2(VARANDA LIGHTS)	0	36	0	0
70	LH -3 (VARANDA LIGHTS)	0	36	0	0

SL NO	BLOCK NAME	TUBE LIGHT 1*36 watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
71	LH -4(VARANDA LIGHTS)	0	36	0	0
72	LH -5-A-(VARANDA LIGHTS)	0	36	0	0
73	LH -5-B-(VARANDA LIGHTS)	0	36	0	0
74	LH -6 (VARANDA LIGHTS)	0	36	0	0
75	LH -1 (Stair Case Lights)	0	36	0	0
76	LH -2 (Stair Case Lights)	0	36	0	0
77	LH -3 (Stair Case Lights)	0	36	0	0
78	LH -4 (Stair Case Lights)	12	36	6	2592
79	LH -5-A (Stair Case Lights)	0	36	0	0
80	LH -5-B (Stair Case Lights)	0	36	0	0
81	LH -6 (Stair Case Lights)	0	36	0	0
82	LH -1 (Toilet Lights)	0	36	0	0
83	LH -2 (Toilet Lights)	0	36	0	0
84	LH -3 (Toilet Lights)	0	36	0	0
85	LH -4 (Toilet Lights)	0	36	0	0
86	LH -5-A (Toilet Lights)	32	36	4	4608
87	LH -5-B(Toilet Lights)	0	36	0	0
88	LH -6 (Toilet Lights)	0	36	0	0
89	LH -1 (Common Room Lights)	12	36	4	1728
90	LH -2 (Common Room Lights)	16	36	4	2304
91	LH -3 (Common Room Lights)	8	36	4	1152
92	LH -4 (Common Room Lights)	12	36	4	1728
93	LH -5-A (Common Room Lights)	0	36	0	0
94	LH -5-B (Common Room Lights)	0	36	0	0
95	LH -6 (Common Room Lights)	0	36	0	0
	TOTAL FITTINGS	**3839**			**716904**

SI. NO	BLOCK NAME	LED TUBE -1*18 W FITTING			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
1	COMPUTER SCIENCE ENGINEERING BLOCK	138	18	4	9936
2	INFORMATION TECHNOLOGY BLOCK	19	18	4	1368
3	ECE OLD BLOCK	23	18	4	1656

SI. NO	BLOCK NAME	LED TUBE -1*18 W FITTING			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
4	ECE ANNEX BLOCK	175	18	4	12600
5	MECHANICAL ENGINEERING BLOCK	7	18	4	504
6	SOM BLOCK	5	18	4	360
7	SACE BLOCK	4	18	4	288
8	WORK SHOP BLOCK	18	18	4	1296
9	CORE LAB BLOCK	17	18	4	1224
10	EEE EAST WING	14	18	4	1008
11	EEE WEST WING	13	18	4	936
12	CHEMICAL ENGINEERING BLOCK	16	18	4	1152
13	BIOMEDICAL ENGINEERING BLOCK	2	18	4	144
14	HUMANITIES BLOCK	35	18	4	2520
15	ADMIN BLOCK	19	18	4	1368
16	LIBRARY AND COMPUTER CENTRE	3	18	4	216
17	CARRIER DEVOLOPMENT CENTRE	2	18	4	144
18	MAIN CANTEEN	26	18	6	2808
19	SUBSTATION -1	0	18	0	0
20	SUBSTATION -2	8	18	8	1152
21	INNOVATION AND INGUBATION CENTRE	5	18	4	360
22	OLD SPORTS CENTRE	7	18	4	504
23	CSE ANNEX	12	18	4	864
24	GH -1(DOUBLE ROOM)	0	18	0	0
25	GH-2(DOUBLE ROOM)	0	18	0	0
26	GH-3(SINGLE ROOM)	0	18	0	0
27	GH-4(TRIPLE ROOM)	0	18	0	0
28	GH-5(TRIPLE ROOM)	0	18	0	0
29	GH-6(SINGLE ROOM)	0	18	0	0
30	GH-7(SINGLE ROOM)	0	18	0	0
31	GH-8(SINGLE ROOM)	0	18	0	0
32	GH -1VARANDA LIGHTS	0	18	0	0
33	GH -2 VARANDA LIGHTS	0	18	0	0
34	GH -3 VARANDA LIGHTS	0	18	0	0
35	GH -4 VARANDA LIGHTS	0	18	0	0
36	GH -5 VARANDA LIGHTS	0	18	0	0
37	GH -6 VARANDA LIGHTS	180	18	6	19440
38	GH -7 VARANDA LIGHTS	0	18	0	0
39	GH -8 VARANDA LIGHTS	0	18	0	0

SI. NO	BLOCK NAME	LED TUBE -1*18 W FITTING			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
40	GH -4 (Stair Case Lights)	0	18	0	0
41	GH -5 (Stair Case Lights)	0	18	0	0
42	GH -6 (Stair Case Lights)	0	18	0	0
43	GH -7 (Stair Case Lights)	32	18	6	3456
44	GH -8(Stair Case Lights)	0	18	0	0
45	GH -1(Toilet Lights)	0	18	0	0
46	GH -2(Toilet Lights)	64	18	4	4608
47	GH -3(Toilet Lights)	20	18	4	1440
48	GH -4 (Toilet Lights)	96	18	4	6912
49	GH -5 (Toilet Lights)	0	18	0	0
50	GH -6 (Toilet Lights)	0	18	0	0
51	GH -7 (Toilet Lights)	0	18	0	0
52	GH -8 (Toilet Lights)	0	18	0	0
53	GH -1 (Common Room Lights)	0	18	0	0
54	GH -2 (Common Room Lights)	0	18	0	0
55	GH -3 (Common Room Lights)	0	18	0	0
56	GH -4 (Common Room Lights)	0	18	0	0
57	GH -5 (Common Room Lights)	0	18	0	0
58	GH -6 (Common Room Lights)	0	18	0	0
59	GH -7 (Common Room Lights)	0	18	0	0
60	GH -8 (Common Room Lights)	8	18	4	576
61	LH -1(DOUBLE ROOM)	0	18	0	0
62	LH-2(DOUBLE ROOM)	0	18	0	0
63	LH-3(TRIPLE ROOM)	0	18	0	0
64	LH-4(DOUBLE ROOM)	0	18	0	0
65	LH-5-A (SINGLE ROOM)	0	18	0	0
66	LH-5-B (SINGLE ROOM)	0	18	0	0
67	LH-6(TRIPLE ROOM)	0	18	0	0
68	LH -1(VARANDA LIGHTS)	0	18	0	0
69	LH -2(VARANDA LIGHTS)	0	18	0	0
70	LH -3 (VARANDA LIGHTS)	0	18	0	0
71	LH -4(VARANDA LIGHTS)	0	18	0	0
72	LH -5-A (VARANDA LIGHTS)	0	18	0	0
73	LH -5-B (VARANDA LIGHTS)	0	18	0	0
74	LH -6 (VARANDA LIGHTS)	0	18	0	0
75	LH -1 (Stair Case Lights)	0	18	0	0
76	LH -2 (Stair Case Lights)	0	18	0	0

SI. NO	BLOCK NAME	LED TUBE -1*18 W FITTING			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
77	LH -3 (Stair Case Lights)	0	18	0	0
78	LH -4 (Stair Case Lights)	0	18	0	0
79	LH -5-A (Stair Case Lights)	0	18	0	0
80	LH -5-B (Stair Case Lights)	0	18	0	0
81	LH -6 (Stair Case Lights)	0	18	0	0
82	LH -1 (Toilet Lights)	32	18	4	2304
83	LH -2 (Toilet Lights)	28	18	4	2016
84	LH -3 (Toilet Lights)	24	18	4	1728
85	LH -4 (Toilet Lights)	48	18	4	3456
86	LH -5-A (Toilet Lights)	0	18	0	0
87	LH -5-B (Toilet Lights)	0	18	0	0
88	LH -6 (Toilet Lights)	0	18	0	0
89	LH -1 (Common Room Lights)	0	18	0	0
90	LH -2 (Common Room Lights)	0	18	0	0
91	LH -3 (Common Room Lights)	0	18	0	0
92	LH -4 (Common Room Lights)	0	18	0	0
93	LH -5-A (Common Room Lights)	0	18	0	0
94	LH -5-B (Common Room Lights)	0	18	0	0
95	LH -6 (Common Room Lights)	0	18	0	0
	TOTAL FITTINGS	**1100**			**88344**

SI. NO	BLOCK NAME	LED 22 Watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
1	COMPUTER SCIENCE ENGINEERING BLOCK	0	22	0	0
2	INFORMATION TECHNOLOGY BLOCK	0	22	0	0
3	ECE OLD BLOCK	0	22	0	0
4	ECE ANNEX BLOCK	0	22	0	0
5	MECHANICAL ENGINEERING BLOCK	0	22	0	0
6	SOM BLOCK	0	22	0	0

Sl. No	BLOCK NAME	LED 22 Watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
7	WORK SHOP BLOCK	0	22	0	0
8	CORE LAB BLOCK	0	22	0	0
9	EEE EAST WING	0	22	0	0
10	EEE WEST WING	0	22	0	0
11	CHEMICAL ENGINEERING BLOCK	0	22	0	0
12	BIOMEDICAL ENGINEERING BLOCK	0	22	0	0
13	HUMANITIES BLOCK	0	22	0	0
14	ADMIN BLOCK	0	22	0	0
15	LIBRARY AND COMPUTER CENTRE	0	22	0	0
16	CARRIER DEVOLOPMENT CENTRE	0	22	0	0
17	MAIN CANTEEN	0	22	0	0
18	SUBSTATION -1	0	22	0	0
19	SUBSTATION -2	0	22	0	0
20	INNOVATION AND INGUBATION CENTRE	0	22	0	0
21	OLD SPORTS CENTRE	0	22	0	0
22	CSE ANNEX	0	22	0	0
23	GH -1(DOUBLE ROOM)	0	22	0	0
24	GH-2(DOUBLE ROOM)	0	22	0	0
25	GH-3(SINGLE ROOM)	0	22	0	0
26	GH-4(TRIPLE ROOM)	0	22	0	0
27	GH-5(TRIPLE ROOM)	0	22	0	0
28	GH-6(SINGLE ROOM)	0	22	0	0
29	GH-7(SINGLE ROOM)	136	22	6	17952
30	GH-8(SINGLE ROOM)	185	22	6	24420
31	GH -1VARANDA LIGHTS	0	22	0	0
32	GH -2 VARANDA LIGHTS	0	22	0	0
33	GH -3 VARANDA LIGHTS	0	22	0	0
34	GH -4 VARANDA LIGHTS	0	22	0	0
35	GH -5 VARANDA LIGHTS	0	22	0	0
36	GH -6 VARANDA LIGHTS	0	22	0	0
37	GH -7 VARANDA LIGHTS	60	22	6	7920
38	GH -8 VARANDA LIGHTS	80	22	6	10560
39	GH -4 (Stair Case Lights)	0	22	0	0
40	GH -5 (Stair Case Lights)	0	22	0	0

SI. NO	BLOCK NAME	LED 22 Watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
43	GH -7 (Stair Case Lights)	0	22	0	0
44	GH -8(Stair Case Lights)	28	22	6	3696
45	GH -1(Toilet Lights)	32	22	4	2816
46	GH -2(Toilet Lights)	0	22	0	0
47	GH -3(Toilet Lights)	0	22	0	0
48	GH -4 (Toilet Lights)	0	22	0	0
49	GH -5 (Toilet Lights)	0	22	0	0
50	GH -6 (Toilet Lights)	0	22	0	0
51	GH -7 (Toilet Lights)	0	22	0	0
52	GH -8 (Toilet Lights)	0	22	0	0
53	GH -1 (Common Room Lights)	0	22	0	0
54	GH -2 (Common Room Lights)	0	22	0	0
55	GH -3 (Common Room Lights)	0	22	0	0
56	GH -4 (Common Room Lights)	0	22	0	0
57	GH -5 (Common Room Lights)	0	22	0	0
58	GH -6 (Common Room Lights)	0	22	0	0
59	GH -7 (Common Room Lights)	0	22	0	0
60	GH -8 (Common Room Lights)	0	22	0	
61	LH -1(DOUBLE ROOM)	0	22	0	0
62	LH-2(DOUBLE ROOM)	0	22	0	0
63	LH-3(TRIPLE ROOM)	0	22	0	0
64	LH-4(DOUBLE ROOM)	0	22	0	0
65	LH-5-A(SINGLE ROOM)	0	22	0	0
66	LH-5-B(SINGLE ROOM)	0	22	0	0
67	LH-6(TRIPLE ROOM)	0	22	0	0
68	LH -1(VARANDA LIGHTS)	0	22	0	0
69	LH -2(VARANDA LIGHTS)	0	22	0	0
70	LH -3 (VARANDA LIGHTS)	0	22	0	0
71	LH -4(VARANDA LIGHTS)	0	22	0	0
72	LH -5-A-(VARANDA LIGHTS)	0	22	0	0
73	LH -5-B-(VARANDA LIGHTS)	0	22	0	0
74	LH -6 (VARANDA LIGHTS)	0	22	0	0
75	LH -1 (Stair Case Lights)	0	22	0	0
76	LH -2 (Stair Case Lights)	0	22	0	0
77	LH -3 (Stair Case Lights)	0	22	0	0

SI. NO	BLOCK NAME	LED 22 Watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
79	LH -5-A (Stair Case Lights)	0	22	0	0
80	LH -5-B (Stair Case Lights)	0	22	0	0
81	LH -6 (Stair Case Lights)	0	22	0	0
82	LH -1 (Toilet Lights)	0	22	0	0
83	LH -2 (Toilet Lights)	0	22	0	0
84	LH -3 (Toilet Lights)	0	22	0	0
85	LH -4 (Toilet Lights)	0	22	0	0
86	LH -5-A (Toilet Lights)	0	22	0	0
87	LH -5-B(Toilet Lights)	0	22	0	0
88	LH -6 (Toilet Lights)	0	22	0	0
89	LH -1 (Common Room Lights)	0	22	0	0
90	LH -2 (Common Room Lights)	0	22	0	0
91	LH -3 (Common Room Lights)	0	22	0	0
92	LH -4 (Common Room Lights)	0	22	0	0
93	LH -5-A (Common Room Lights)	0	22	0	0
94	LH -5-B (Common Room Lights)	0	22	0	0
95	LH -6 (Common Room Lights)	0	22	0	0

SI. NO	BLOCK NAME	LED 11 Watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
1	COMPUTER SCIENCE ENGINEERING BLOCK	0	11	0	0
2	INFORMATION TECHNOLOGY BLOCK	0	11	0	0
3	ECE OLD BLOCK	0	11	0	0
4	ECE ANNEX BLOCK	0	11	0	0
5	MECHANICAL ENGINEERING BLOCK	0	11	0	0
6	SOM BLOCK	0	11	0	0
7	SACE BLOCK	0	11	0	0
8	WORK SHOP BLOCK	0	11	0	0
9	CORE LAB BLOCK	0	11	0	0
10	EEE EAST WING	0	11	0	0
11	EEE WEST WING	0	11	0	0
12	CHEMICAL ENGINEERING BLOCK	0	11	0	0

SI. NO	BLOCK NAME	LED 11 Watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
13	BIOMEDICAL ENGINEERING BLOCK	0	11	0	0
14	HUMANITIES BLOCK	0	11	0	0
15	ADMIN BLOCK	0	11	0	0
16	LIBRARY AND COMPUTER CENTRE	0	11	0	0
17	CARRIER DEVOLOPMENT CENTRE	0	11	0	0
18	MAIN CANTEEN	0	11	0	0
19	SUBSTATION -1	0	11	0	0
20	SUBSTATION -2	0	11	0	0
21	INNOVATION AND INGUBATION CENTRE	0	11	0	0
22	OLD SPORTS CENTRE	0	11	0	0
23	CSE ANNEX	0	11	0	0
24	GH -1(DOUBLE ROOM)	0	11	0	0
25	GH-2(DOUBLE ROOM)	0	11	0	0
26	GH-3(SINGLE ROOM)	0	11	0	0
27	GH-4(TRIPLE ROOM)	0	11	0	0
28	GH-5(TRIPLE ROOM)	0	11	0	0
29	GH-6(SINGLE ROOM)	0	11	0	0
30	GH-7(SINGLE ROOM)	0	11	0	0
31	GH-8(SINGLE ROOM)	0	11	0	0
32	GH -1VARANDA LIGHTS	0	11	0	0
33	GH -2 VARANDA LIGHTS	0	11	0	0
34	GH -3 VARANDA LIGHTS	0	11	0	0
35	GH -4 VARANDA LIGHTS	0	11	0	0
36	GH -5 VARANDA LIGHTS	0	11	0	0
37	GH -6 VARANDA LIGHTS	0	11	0	0
38	GH -7 VARANDA LIGHTS	0	11	0	0
39	GH -8 VARANDA LIGHTS	0	11	0	0
40	GH -4 (Stair Case Lights)	0	11	0	0
41	GH -5 (Stair Case Lights)	0	11	0	0
42	GH -6 (Stair Case Lights)	0	11	0	0
43	GH -7 (Stair Case Lights)	0	11	0	0
44	GH -8(Stair Case Lights)	0	11	0	0
45	GH -1(Toilet Lights)	0	11	0	0
46	GH -2(Toilet Lights)	0	11	0	0
47	GH -3(Toilet Lights)	0	11	0	0
48	GH -4 (Toilet Lights)	0	11	0	0
49	GH -5 (Toilet Lights)	0	11	0	0

SI. NO	BLOCK NAME	LED 11 Watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
50	GH -6 (Toilet Lights)	0	11	0	0
51	GH -7 (Toilet Lights)	0	11	0	0
52	GH -8 (Toilet Lights)	185	11	4	8140
53	GH -1 (Common Room Lights)	0	11	0	0
54	GH -2 (Common Room Lights)	0	11	0	0
55	GH -3 (Common Room Lights)	0	11	0	0
56	GH -4 (Common Room Lights)	13	11	4	572
57	GH -5 (Common Room Lights)	0	11	0	0
58	GH -6 (Common Room Lights)	8	11	4	352
59	GH -7 (Common Room Lights)	0	11	0	0
60	GH -8 (Common Room Lights)	12	11	4	528
61	LH -1(DOUBLE ROOM)	0	11	0	0
62	LH-2(DOUBLE ROOM)	0	11	0	0
63	LH-3(TRIPLE ROOM)	0	11	0	0
64	LH-4(DOUBLE ROOM)	0	11	0	0
65	LH-5-A(SINGLE ROOM)	0	11	0	0
66	LH-5-B(SINGLE ROOM)	0	11	0	0
67	LH-6(TRIPLE ROOM)	0	11	0	0
68	LH -1(VARANDA LIGHTS)	0	11	0	0
69	LH -2(VARANDA LIGHTS)	0	11	0	0
70	LH -3 (VARANDA LIGHTS)	0	11	0	0
71	LH -4(VARANDA LIGHTS)	0	11	0	0
72	LH -5-A-(VARANDA LIGHTS)	0	11	0	0
73	LH -5-B-(VARANDA LIGHTS)	0	11	0	0
74	LH -6 (VARANDA LIGHTS)	0	11	0	0
75	LH -1 (Stair Case Lights)	0	11	0	0
76	LH -2 (Stair Case Lights)	0	11	0	0
77	LH -3 (Stair Case Lights)	0	11	0	0
78	LH -4 (Stair Case Lights)	0	11	0	0
79	LH -5-A (Stair Case Lights)	0	11	0	0
80	LH -5-B (Stair Case Lights)	0	11	0	0
81	LH -6 (Stair Case Lights)	0	11	0	0
82	LH -1 (Toilet Lights)	0	11	0	0
83	LH -2 (Toilet Lights)	0	11	0	0
84	LH -3 (Toilet Lights)	0	11	0	0
85	LH -4 (Toilet Lights)	0	11	0	0
86	LH -5-A (Toilet Lights)	0	11	0	0
87	LH -5-B(Toilet Lights)	32	11	4	1408

SI. NO	BLOCK NAME	LED 11 Watts			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
88	LH -6 (Toilet Lights)	0	11	0	0
89	LH -1 (Common Room Lights)	0	11	0	0
90	LH -2 (Common Room Lights)	0	11	0	0
91	LH -3 (Common Room Lights)	0	11	0	0
92	LH -4 (Common Room Lights)	0	11	0	0
93	LH -5-A (Common Room Lights)	0	11	0	0
94	LH -5-B (Common Room Lights)	0	11	0	0
95	LH -6 (Common Room Lights)	0	11	0	0
	TOTAL FITTINGS	**250**			**11000**

BLOCK NAME	2*11 W.CFL FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	73	22	4	6424
INFORMATION TECHNOLOGY BLOCK	46	22	4	4048
ECE OLD BLOCK	0	22	0	0
ECE ANNEX BLOCK	0	22	0	0
MECHANICAL ENGINEERING BLOCK	0	22	0	0
SOM BLOCK	19	22	4	1672
SACE BLOCK	31	22	4	2728
WORK SHOP BLOCK	0	22	0	0
CORE LAB BLOCK	7	22	4	616
EEE EAST WING	36	22	4	3168
EEE WEST WING	73	22	4	6424
CHEMICAL ENGINEERING BLOCK	72	22	4	6336
BIOMEDICAL ENGINEERING BLOCK	47	22	4	4136
HUMANITIES BLOCK	43	22	4	3784
ADMIN BLOCK	0	22	0	0
LIBRARY AND COMPUTER CENTRE	4	22	4	352
CARRIER DEVOLOPMENT CENTRE	0	22	0	0

MAIN CANTEEN	22	22	6	2904
SUBSTATION -1	0	22	0	0
SUBSTATION -2	0	22	0	0
INNOVATION AND INGUBATION CENTRE	0	22	0	0
OLD SPORTS CENTRE	33	22	4	2904
CSE ANNEX	0	22	0	0
GH -1(DOUBLE ROOM)	0	22	0	0
GH-2(DOUBLE ROOM)	0	22	0	0
GH-3(SINGLE ROOM)	0	22	0	0
GH-4(TRIPLE ROOM)	0	22	0	0
GH-5(TRIPLE ROOM)	0	22	0	0
GH-6(SINGLE ROOM)	0	22	0	0
GH-7(SINGLE ROOM)	0	22	0	0
GH-8(SINGLE ROOM)	0	22	0	0
GH -1VARANDA LIGHTS	0	22	0	0
GH -2 VARANDA LIGHTS	40	22	6	5280
GH -3 VARANDA LIGHTS	40	22	6	5280
GH -4 VARANDA LIGHTS	80	22	6	10560
GH -5 VARANDA LIGHTS	0	22	0	0
GH -6 VARANDA LIGHTS	0	22	0	0
GH -7 VARANDA LIGHTS	0	22	0	0
GH -8 VARANDA LIGHTS	0	22	0	0
GH -4 (Stair Case Lights)	18	22	6	2376
GH -5 (Stair Case Lights)	0	22	0	0
GH -6 (Stair Case Lights)	0	22	0	0
GH -7 (Stair Case Lights)	0	22	0	0
GH -8(Stair Case Lights)	0	22	0	0
GH -1(Toilet Lights)	0	22	0	0
GH -2(Toilet Lights)	0	22	0	0
GH -3(Toilet Lights)	0	22	0	0
GH -4 (Toilet Lights)	0	22	0	0
GH -5 (Toilet Lights)	0	22	0	0
GH -6 (Toilet Lights)	0	22	0	0
GH -7 (Toilet Lights)	0	22	0	0
GH -8 (Toilet Lights)	0	22	0	0
GH -1 (Common Room Lights)	0	22	0	0
GH -2 (Common Room Lights)	0	22	0	0
GH -3 (Common Room Lights)	0	22	0	0
GH -4 (Common Room Lights)	0	22	0	0
GH -5 (Common Room Lights)	0	22	0	0
GH -6 (Common Room Lights)	0	22	0	0

GH -7 (Common Room Lights)	0	22	0	0
GH -8 (Common Room Lights)	0	22	0	0
LH -1(DOUBLE ROOM)	0	22	0	0
LH-2(DOUBLE ROOM)	0	22	0	0
LH-3(TRIPLE ROOM)	0	22	0	0
LH-4(DOUBLE ROOM)	0	22	0	0
LH-5-A(SINGLE ROOM)	0	22	0	0
LH-5-B(SINGLE ROOM)	0	22	0	0
LH-6(TRIPLE ROOM)	0	22	0	0
LH -1(VARANDA LIGHTS)	0	22	0	0
LH -2(VARANDA LIGHTS)	34	22	6	4488
LH -3 (VARANDA LIGHTS)	36	22	6	4752
LH -4(VARANDA LIGHTS)	104	22	6	13728
LH -5-A-(VARANDA LIGHTS)	0	22	0	0
LH -5-B-(VARANDA LIGHTS)	0	22	0	0
LH -6 (VARANDA LIGHTS)	0	22	0	0
LH -1 (Stair Case Lights)	3	22	6	396
LH -2 (Stair Case Lights)	6	22	6	792
LH -3 (Stair Case Lights)	4	22	6	528
LH -4 (Stair Case Lights)	0	22	0	0
LH -5-A (Stair Case Lights)	0	22	0	0
LH -5-B (Stair Case Lights)	0	22	0	0
LH -6 (Stair Case Lights)	0	22	0	0
LH -1 (Toilet Lights)	0	22	0	0
LH -2 (Toilet Lights)	0	22	0	0
LH -3 (Toilet Lights)	0	22	0	0
LH -4 (Toilet Lights)	0	22	0	0
LH -5-A (Toilet Lights)	0	22	0	0
LH -5-B(Toilet Lights)	0	22	0	0
LH -6 (Toilet Lights)	0	22	0	0
LH -1 (Common Room Lights)	0	22	0	0
LH -2 (Common Room Lights)	0	22	0	0
LH -3 (Common Room Lights)	0	22	0	0
LH -4 (Common Room Lights)	0	22	0	0
LH -5-A (Common Room Lights)	0	22	0	0
LH -5-B (Common Room Lights)	0	22	0	0
LH -6 (Common Room Lights)	0	22	0	0
TOTAL FITTINGS	**871**			**93676**

BLOCK NAME	2*2 feet LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	12	40	4	1920
INFORMATION TECHNOLOGY BLOCK	0	40	0	0
ECE OLD BLOCK	0	40	0	0
ECE ANNEX BLOCK	0	40	0	0
MECHANICAL ENGINEERING BLOCK	0	40	0	0
SOM BLOCK	90	40	4	14400
SACE BLOCK	17	40	4	2720
WORK SHOP BLOCK	0	40	0	0
CORE LAB BLOCK	0	40	0	0
EEE EAST WING	0	40	0	0
EEE WEST WING	0	40	0	0
CHEMICAL ENGINEERING BLOCK	0	40	0	0
BIOMEDICAL ENGINEERING BLOCK	26	40	4	4160
HUMANITIES BLOCK	0	40	0	0
ADMIN BLOCK	0	40	0	0
LIBRARY AND COMPUTER CENTRE	29	40	4	4640
CARRIER DEVOLOPMENT CENTRE	131	40	4	20960
MAIN CANTEEN	0	40	0	0
SUBSTATION -1	0	40	0	0
SUBSTATION -2	0	40	0	0
INNOVATION AND INGUBATION CENTRE	14	40	4	2240
OLD SPORTS CENTRE	0	40	0	0
CSE ANNEX	103	40	4	16480
GH -1(DOUBLE ROOM)	0	40	0	0
GH-2(DOUBLE ROOM)	0	40	0	0
GH-3(SINGLE ROOM)	0	40	0	0
GH-4(TRIPLE ROOM)	0	40	0	0
GH-5(TRIPLE ROOM)	0	40	0	0
GH-6(SINGLE ROOM)	0	40	0	0
GH-7(SINGLE ROOM)	0	40	0	0

BLOCK NAME	2*2 feet LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH-8(SINGLE ROOM)	0	40	0	0
GH -1VARANDA LIGHTS	0	40	0	0
GH -2 VARANDA LIGHTS	0	40	0	0
GH -3 VARANDA LIGHTS	0	40	0	0
GH -4 VARANDA LIGHTS	0	40	0	0
GH -5 VARANDA LIGHTS	0	40	0	0
GH -6 VARANDA LIGHTS	0	40	0	0
GH -7 VARANDA LIGHTS	0	40	0	0
GH -8 VARANDA LIGHTS	0	40	0	0
GH -4 (Stair Case Lights)	0	40	0	0
GH -5 (Stair Case Lights)	0	40	0	0
GH -6 (Stair Case Lights)	0	40	0	0
GH -7 (Stair Case Lights)	0	40	0	0
GH -8(Stair Case Lights)	0	40	0	0
GH -1(Toilet Lights)	0	40	0	0
GH -2(Toilet Lights)	0	40	0	0
GH -3(Toilet Lights)	0	40	0	0
GH -4 (Toilet Lights)	0	40	0	0
GH -5 (Toilet Lights)	0	40	0	0
GH -6 (Toilet Lights)	0	40	0	0
GH -7 (Toilet Lights)	0	40	0	0
GH -8 (Toilet Lights)	0	40	0	0
GH -1 (Common Room Lights)	0	40	0	0
GH -2 (Common Room Lights)	0	40	0	0
GH -3 (Common Room Lights)	0	40	0	0
GH -4 (Common Room Lights)	0	40	0	0
GH -5 (Common Room Lights)	0	40	0	0
GH -6 (Common Room Lights)	0	40	0	0
GH -7 (Common Room Lights)	0	40	0	0
GH -8 (Common Room Lights)	0	40	0	0
LH -1(DOUBLE ROOM)	0	40	0	0
LH-2(DOUBLE ROOM)	0	40	0	0
LH-3(TRIPLE ROOM)	0	40	0	0
LH-4(DOUBLE ROOM)	0	40	0	0
LH-5-A(SINGLE ROOM)	0	40	0	0
LH-5-B(SINGLE ROOM)	0	40	0	0
LH-6(TRIPLE ROOM)	0	40	0	0

BLOCK NAME	2*2 feet LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -1(VARANDA LIGHTS)	0	40	0	0
LH -2(VARANDA LIGHTS)	0	40	0	0
LH -3 (VARANDA LIGHTS)	0	40	0	0
LH -4(VARANDA LIGHTS)	0	40	0	0
LH -5-A-(VARANDA LIGHTS)	0	40	0	0
LH -5-B-(VARANDA LIGHTS)	0	40	0	0
LH -6 (VARANDA LIGHTS)	0	40	0	0
LH -1 (Stair Case Lights)	0	40	0	0
LH -2 (Stair Case Lights)	0	40	0	0
LH -3 (Stair Case Lights)	0	40	0	0
LH -4 (Stair Case Lights)	0	40	0	0
LH -5-A (Stair Case Lights)	0	40	0	0
LH -5-B (Stair Case Lights)	0	40	0	0
LH -6 (Stair Case Lights)	0	40	0	0
LH -1 (Toilet Lights)	0	40	0	0
LH -2 (Toilet Lights)	0	40	0	0
LH -3 (Toilet Lights)	0	40	0	0
LH -4 (Toilet Lights)	0	40	0	0
LH -5-A (Toilet Lights)	0	40	0	0
LH -5-B(Toilet Lights)	0	40	0	0
LH -6 (Toilet Lights)	0	40	0	0
LH -1 (Common Room Lights)	0	40	0	0
LH -2 (Common Room Lights)	0	40	0	0
LH -3 (Common Room Lights)	0	40	0	0
LH -4 (Common Room Lights)	0	40	0	0
LH -5-A (Common Room Lights)	0	40	0	0
LH -5-B (Common Room Lights)	0	40	0	0
LH -6 (Common Room Lights)	0	40	0	0
TOTAL FITTINGS	**422**			**67520**

BLOCK NAME	1*1 feet LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	10	0	0
INFORMATION TECHNOLOGY BLOCK	0	10	0	0
ECE OLD BLOCK	0	10	0	0
ECE ANNEX BLOCK	0	10	0	0
MECHANICAL ENGINEERING BLOCK	0	10	0	0
SOM BLOCK	25	10	4	1000
SACE BLOCK	0	10	0	0
WORK SHOP BLOCK	0	10	0	0
CORE LAB BLOCK	0	10	0	0
EEE EAST WING	0	10	0	0
EEE WEST WING	4	10	4	160
CHEMICAL ENGINEERING BLOCK	0	10	0	0
BIOMEDICAL ENGINEERING BLOCK	0	10	0	0
HUMANITIES BLOCK	0	10	0	0
ADMIN BLOCK	3	10	4	120
LIBRARY AND COMPUTER CENTRE	0	10	0	0
CARRIER DEVOLOPMENT CENTRE	9	10	4	360
MAIN CANTEEN	0	10	0	0
SUBSTATION -1	0	10	0	0
SUBSTATION -2		10	8	0
INNOVATION AND INGUBATION CENTRE	2	10	4	80
OLD SPORTS CENTRE	0	10	0	0
CSE ANNEX	80	10	4	3200
GH -1(DOUBLE ROOM)	0	10	0	0
GH-2(DOUBLE ROOM)	0	10	0	0
GH-3(SINGLE ROOM)	0	10	0	0
GH-4(TRIPLE ROOM)	0	10	0	0
GH-5(TRIPLE ROOM)	0	10	0	0
GH-6(SINGLE ROOM)	0	10	0	0
GH-7(SINGLE ROOM)	0	10	0	0

BLOCK NAME	1*1 feet LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH-8(SINGLE ROOM)	0	10	0	0
GH -1VARANDA LIGHTS	0	10	0	0
GH -2 VARANDA LIGHTS	0	10	0	0
GH -3 VARANDA LIGHTS	0	10	0	0
GH -4 VARANDA LIGHTS	0	10	0	0
GH -5 VARANDA LIGHTS	0	10	0	0
GH -6 VARANDA LIGHTS	0	10	0	0
GH -7 VARANDA LIGHTS	0	10	0	0
GH -8 VARANDA LIGHTS	0	10	0	0
GH -4 (Stair Case Lights)	0	10	0	0
GH -5 (Stair Case Lights)	0	10	0	0
GH -6 (Stair Case Lights)	0	10	0	0
GH -7 (Stair Case Lights)	0	10	0	0
GH -8(Stair Case Lights)	0	10	0	0
GH -1(Toilet Lights)	0	10	0	0
GH -2(Toilet Lights)	0	10	0	0
GH -3(Toilet Lights)	0	10	0	0
GH -4 (Toilet Lights)	0	10	0	0
GH -5 (Toilet Lights)	0	10	0	0
GH -6 (Toilet Lights)	0	10	0	0
GH -7 (Toilet Lights)	0	10	0	0
GH -8 (Toilet Lights)	0	10	0	0
GH -1 (Common Room Lights)	0	10	0	0
GH -2 (Common Room Lights)	0	10	0	0
GH -3 (Common Room Lights)	0	10	0	0
GH -4 (Common Room Lights)	0	10	0	0
GH -5 (Common Room Lights)	0	10	0	0
GH -6 (Common Room Lights)	0	10	0	0
GH -7 (Common Room Lights)	0	10	0	0
GH -8 (Common Room Lights)	0	10	0	0
LH -1(DOUBLE ROOM)	0	10	0	0
LH-2(DOUBLE ROOM)	0	10	0	0
LH-3(TRIPLE ROOM)	0	10	0	0
LH-4(DOUBLE ROOM)	0	10	0	0
LH-5-A(SINGLE ROOM)	0	10	0	0
LH-5-B(SINGLE ROOM)	0	10	0	0
LH-6(TRIPLE ROOM)	0	10	0	0

BLOCK NAME	1*1 feet LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -1(VARANDA LIGHTS)	0	10	0	0
LH -2(VARANDA LIGHTS)	0	10	0	0
LH -3 (VARANDA LIGHTS)	0	10	0	0
LH -4(VARANDA LIGHTS)	0	10	0	0
LH -5-A-(VARANDA LIGHTS)	0	10	0	0
LH -5-B-(VARANDA LIGHTS)	0	10	0	0
LH -6 (VARANDA LIGHTS)	0	10	0	0
LH -1 (Stair Case Lights)	0	10	0	0
LH -2 (Stair Case Lights)	0	10	0	0
LH -3 (Stair Case Lights)	0	10	0	0
LH -4 (Stair Case Lights)	0	10	0	0
LH -5-A (Stair Case Lights)	0	10	0	0
LH -5-B (Stair Case Lights)	0	10	0	0
LH -6 (Stair Case Lights)	0	10	0	0
LH -1 (Toilet Lights)	0	10	0	0
LH -2 (Toilet Lights)	0	10	0	0
LH -3 (Toilet Lights)	0	10	0	0
LH -4 (Toilet Lights)	0	10	0	0
LH -5-A (Toilet Lights)	0	10	0	0
LH -5-B(Toilet Lights)	0	10	0	0
LH -6 (Toilet Lights)	0	10	0	0
LH -1 (Common Room Lights)	0	10	0	0
LH -2 (Common Room Lights)	0	10	0	0
LH -3 (Common Room Lights)	0	10	0	0
LH -4 (Common Room Lights)	0	10	0	0
LH -5-A (Common Room Lights)	0	10	0	0
LH -5-B (Common Room Lights)	0	10	0	0
LH -6 (Common Room Lights)	0	10	0	0
TOTAL FITTINGS	**123**			**4920**

BLOCK NAME	2*18 W CFL FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	36	0	0
INFORMATION TECHNOLOGY BLOCK	0	36	0	0
ECE OLD BLOCK	0	36	0	0
ECE ANNEX BLOCK	0	36	0	0
MECHANICAL ENGINEERING BLOCK	0	36	0	0
SOM BLOCK	0	36	0	0
SACE BLOCK	0	36	0	0
WORK SHOP BLOCK	32	36	4	4608
CORE LAB BLOCK	0	36	0	0
EEE EAST WING	0	36	0	0
EEE WEST WING	0	36	0	0
CHEMICAL ENGINEERING BLOCK	0	36	0	0
BIOMEDICAL ENGINEERING BLOCK	0	36	0	0
HUMANITIES BLOCK	0	36	0	0
ADMIN BLOCK	0	36	0	0
LIBRARY AND COMPUTER CENTRE	0	36	0	0
CARRIER DEVOLOPMENT CENTRE	0	36	0	0
MAIN CANTEEN		36		0
SUBSTATION -1	0	36	0	0
SUBSTATION -2	0	36	0	0
INNOVATION AND INGUBATION CENTRE	0	36	0	0
OLD SPORTS CENTRE	0	36	0	0
CSE ANNEX	0	36	0	0
GH -1(DOUBLE ROOM)	0	36	0	0
GH-2(DOUBLE ROOM)	0	36	0	0
GH-3(SINGLE ROOM)	0	36	0	0
GH-4(TRIPLE ROOM)	0	36	0	0
GH-5(TRIPLE ROOM)	0	36	0	0
GH-6(SINGLE ROOM)	0	36	0	0
GH-7(SINGLE ROOM)	0	36	0	0

BLOCK NAME	2*18 W CFL FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH-8(SINGLE ROOM)	0	36	0	0
GH -1VARANDA LIGHTS	0	36	0	0
GH -2 VARANDA LIGHTS	0	36	0	0
GH -3 VARANDA LIGHTS	0	36	0	0
GH -4 VARANDA LIGHTS	0	36	0	0
GH -5 VARANDA LIGHTS	0	36	0	0
GH -6 VARANDA LIGHTS	0	36	0	0
GH -7 VARANDA LIGHTS	0	36	0	0
GH -8 VARANDA LIGHTS	0	36	0	0
GH -4 (Stair Case Lights)	0	36	0	0
GH -5 (Stair Case Lights)	0	36	0	0
GH -6 (Stair Case Lights)	0	36	0	0
GH -7 (Stair Case Lights)	0	36	0	0
GH -8(Stair Case Lights)	0	36	0	0
GH -1(Toilet Lights)	0	36	0	0
GH -2(Toilet Lights)	0	36	0	0
GH -3(Toilet Lights)	0	36	0	0
GH -4 (Toilet Lights)	0	36	0	0
GH -5 (Toilet Lights)	0	36	0	0
GH -6 (Toilet Lights)	0	36	0	0
GH -7 (Toilet Lights)	0	36	0	0
GH -8 (Toilet Lights)	0	36	0	0
GH -1 (Common Room Lights)	0	36	0	0
GH -2 (Common Room Lights)	0	36	0	0
GH -3 (Common Room Lights)	0	36	0	0
GH -4 (Common Room Lights)	0	36	0	0
GH -5 (Common Room Lights)	0	36	0	0
GH -6 (Common Room Lights)	0	36	0	0
GH -7 (Common Room Lights)	0	36	0	0
GH -8 (Common Room Lights)	0	36	0	0
LH -1(DOUBLE ROOM)	0	36	0	0
LH-2(DOUBLE ROOM)	0	36	0	0
LH-3(TRIPLE ROOM)	0	36	0	0
LH-4(DOUBLE ROOM)	0	36	0	0
LH-5-A(SINGLE ROOM)	0	36	0	0
LH-5-B(SINGLE ROOM)	0	36	0	0
LH-6(TRIPLE ROOM)	0	36	0	0

BLOCK NAME	2*18 W CFL FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -1(VARANDA LIGHTS)	0	36	0	0
LH -2(VARANDA LIGHTS)	0	36	0	0
LH -3 (VARANDA LIGHTS)	0	36	0	0
LH -4(VARANDA LIGHTS)	0	36	0	0
LH -5-A-(VARANDA LIGHTS)	0	36	0	0
LH -5-B-(VARANDA LIGHTS)	0	36	0	0
LH -6 (VARANDA LIGHTS)	0	36	0	0
LH -1 (Stair Case Lights)	0	36	0	0
LH -2 (Stair Case Lights)	0	36	0	0
LH -3 (Stair Case Lights)	0	36	0	0
LH -4 (Stair Case Lights)	0	36	0	0
LH -5-A (Stair Case Lights)	0	36	0	0
LH -5-B (Stair Case Lights)	0	36	0	0
LH -6 (Stair Case Lights)	0	36	0	0
LH -1 (Toilet Lights)	0	36	0	0
LH -2 (Toilet Lights)	0	36	0	0
LH -3 (Toilet Lights)	0	36	0	0
LH -4 (Toilet Lights)	0	36	0	0
LH -5-A (Toilet Lights)	0	36	0	0
LH -5-B(Toilet Lights)	0	36	0	0
LH -6 (Toilet Lights)	0	36	0	0
LH -1 (Common Room Lights)	0	36	0	0
LH -2 (Common Room Lights)	0	36	0	0
LH -3 (Common Room Lights)	0	36	0	0
LH -4 (Common Room Lights)	0	36	0	0
LH -5-A (Common Room Lights)	0	36	0	0
LH -5-B (Common Room Lights)	0	36	0	0
LH -6 (Common Room Lights)	0	36	0	0
TOTAL FITTINGS	**32**			**4608**

BLOCK NAME	10 WATTS STEP LIGHTS			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	10	0	0
INFORMATION TECHNOLOGY BLOCK	0	10	0	0
ECE OLD BLOCK	0	10	0	0
ECE ANNEX BLOCK	0	10	0	0
MECHANICAL ENGINEERING BLOCK	0	10	0	0
SOM BLOCK	0	10	0	0
SACE BLOCK	0	10	0	0
WORKSHOP BLOCK	8	10	4	320
CORE LAB BLOCK	0	10	0	0
EEE EAST WING	0	10	0	0
EEE WEST WING	0	10	0	0
CHEMICAL ENGINEERING BLOCK	0	10	0	0
BIOMEDICAL ENGINEERING BLOCK	0	10	0	0
HUMANITIES BLOCK	0	10	0	0
ADMIN BLOCK	0	10	0	0
LIBRARY AND COMPUTER CENTRE	0	10	0	0
CARRIER DEVELOPMENT CENTRE	0	10	0	0
MAIN CANTEEN	0	10	0	0
SUBSTATION -1	0	10	0	0
SUBSTATION -2	0	10	0	0
INNOVATION AND INCUBATION CENTRE	0	10	0	0
OLD SPORTS CENTRE	0	10	0	0
CSE ANNEX	0	10	0	0
GH -1(DOUBLE ROOM)	0	10	0	0
GH-2(DOUBLE ROOM)	0	10	0	0
GH-3(SINGLE ROOM)	0	10	0	0
GH-4(TRIPLE ROOM)	0	10	0	0
GH-5(TRIPLE ROOM)	0	10	0	0
GH-6(SINGLE ROOM)	0	10	0	0

BLOCK NAME	10 WATTS STEP LIGHTS			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH-7(SINGLE ROOM)	0	10	0	0
GH-8(SINGLE ROOM)	0	10	0	0
GH -1VARANDA LIGHTS	0	10	0	0
GH -2 VARANDA LIGHTS	0	10	0	0
GH -3 VARANDA LIGHTS	0	10	0	0
GH -4 VARANDA LIGHTS	0	10	0	0
GH -5 VARANDA LIGHTS	0	10	0	0
GH -6 VARANDA LIGHTS	0	10	0	0
GH -7 VARANDA LIGHTS	0	10	0	0
GH -8 VARANDA LIGHTS	0	10	0	0
GH -4 (Stair Case Lights)	0	10	0	0
GH -5 (Stair Case Lights)	0	10	0	0
GH -6 (Stair Case Lights)	0	10	0	0
GH -7 (Stair Case Lights)	0	10	0	0
GH -8(Stair Case Lights)	0	10	0	0
GH -1(Toilet Lights)	0	10	0	0
GH -2(Toilet Lights)	0	10	0	0
GH -3(Toilet Lights)	0	10	0	0
GH -4 (Toilet Lights)	0	10	0	0
GH -5 (Toilet Lights)	0	10	0	0
GH -6 (Toilet Lights)	0	10	0	0
GH -7 (Toilet Lights)	0	10	0	0
GH -8 (Toilet Lights)	0	10	0	0
GH -1 (Common Room Lights)	0	10	0	0
GH -2 (Common Room Lights)	0	10	0	0
GH -3 (Common Room Lights)	0	10	0	0
GH -4 (Common Room Lights)	0	10	0	0
GH -5 (Common Room Lights)	0	10	0	0
GH -6 (Common Room Lights)	0	10	0	0
GH -7 (Common Room Lights)	0	10	0	0
GH -8 (Common Room Lights)	0	10	0	0
LH -1(DOUBLE ROOM)	0	10	0	0
LH-2(DOUBLE ROOM)	0	10	0	0
LH-3(TRIPLE ROOM)	0	10	0	0
LH-4(DOUBLE ROOM)	0	10	0	0

BLOCK NAME	10 WATTS STEP LIGHTS			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH-5-A (SINGLE ROOM)	0	10	0	0
LH-5-B (SINGLE ROOM)	0	10	0	0
LH-6(TRIPLE ROOM)	0	10	0	0
LH -1(VARANDA LIGHTS)	0	10	0	0
LH -2(VARANDA LIGHTS)	0	10	0	0
LH -3 (VARANDA LIGHTS)	0	10	0	0
LH -4(VARANDA LIGHTS)	0	10	0	0
LH -5-A- (VARANDA LIGHTS)	0	10	0	0
LH -5-B- (VARANDA LIGHTS)	0	10	0	0
LH -6 (VARANDA LIGHTS)	0	10	0	0
LH -1 (Stair Case Lights)	0	10	0	0
LH -2 (Stair Case Lights)	0	10	0	0
LH -3 (Stair Case Lights)	0	10	0	0
LH -4 (Stair Case Lights)	0	10	0	0
LH -5-A (Stair Case Lights)	0	10	0	0
LH -5-B (Stair Case Lights)	0	10	0	0
LH -6 (Stair Case Lights)	0	10	0	0
LH -1 (Toilet Lights)	0	10	0	0
LH -2 (Toilet Lights)	0	10	0	0
LH -3 (Toilet Lights)	0	10	0	0
LH -4 (Toilet Lights)	0	10	0	0
LH -5-A (Toilet Lights)	0	10	0	0
LH -5-B(Toilet Lights)	0	10	0	0
LH -6 (Toilet Lights)	0	10	0	0
LH -1 (Common Room Lights)	0	10	0	0
LH -2 (Common Room Lights)	0	10	0	0
LH -3 (Common Room Lights)	0	10	0	0
LH -4 (Common Room Lights)	0	10	0	0
LH -5-A (Common Room Lights)	0	10	0	0
LH -5-B (Common Room Lights)	0	10	0	0
LH -6 (Common Room Lights)	0	10	0	0
TOTAL FITTINGS	**8**			**320**

BLOCK NAME	2*2 FEET MICRO TUBE FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	64	0	0
INFORMATION TECHNOLOGY BLOCK	0	64	0	0
ECE OLD BLOCK	0	64	0	0
ECE ANNEX BLOCK	49	64	4	12544
MECHANICAL ENGINEERING BLOCK	0	64	0	0
SOM BLOCK	0	64	0	0
SACE BLOCK	0	64	0	0
CORE LAB BLOCK	0	64	0	0
EEE EAST WING	0	64	0	0
EEE WEST WING	0	64	0	0
CHEMICAL ENGINEERING BLOCK	0	64	0	0
BIOMEDICAL ENGINEERING BLOCK	0	64	0	0
HUMANITIES BLOCK	0	64	0	0
ADMIN BLOCK	0	64	0	0
LIBRARY AND COMPUTER CENTRE	0	64	0	0
CARRIER DEVOLOPMENT CENTRE	0	64	0	0
SUBSTATION -1	0	64	0	0
SUBSTATION -2	0	64	0	0
INNOVATION AND INGUBATION CENTRE	0	64	0	0
OLD SPORTS CENTRE	0	64	0	0
CSE ANNEX	0	64	0	0
GH -1(DOUBLE ROOM)	0	64	0	0
GH-2(DOUBLE ROOM)	0	64	0	0
GH-3(SINGLE ROOM)	0	64	0	0
GH-4(TRIPLE ROOM)	0	64	0	0
GH-5(TRIPLE ROOM)	0	64	0	0
GH-6(SINGLE ROOM)	0	64	0	0
GH-7(SINGLE ROOM)	0	64	0	0
GH-8(SINGLE ROOM)	0	64	0	0

GH -1VARANDA LIGHTS	0	64	0	0
GH -2 VARANDA LIGHTS	0	64	0	0
GH -3 VARANDA LIGHTS	0	64	0	0
GH -4 VARANDA LIGHTS	0	64	0	0
GH -5 VARANDA LIGHTS	0	64	0	0
GH -6 VARANDA LIGHTS	0	64	0	0
GH -7 VARANDA LIGHTS	0	64	0	0
GH -4 (Stair Case Lights)	0	64	0	0
GH -5 (Stair Case Lights)	0	64	0	0
GH -6 (Stair Case Lights)	0	64	0	0
GH -7 (Stair Case Lights)	0	64	0	0
GH -8(Stair Case Lights)	0	64	0	0
GH -1(Toilet Lights)	0	64	0	0
GH -2(Toilet Lights)	0	64	0	0
GH -3(Toilet Lights)	0	64	0	0
GH -4 (Toilet Lights)	0	64	0	0
GH -5 (Toilet Lights)	0	64	0	0
GH -6 (Toilet Lights)	0	64	0	0
GH -7 (Toilet Lights)	0	64	0	0
GH -8 (Toilet Lights)	0	64	0	0
GH -1 (Common Room Lights)	0	64	0	0
GH -2 (Common Room Lights)	0	64	0	0
GH -3 (Common Room Lights)	0	64	0	0
GH -4 (Common Room Lights)	0	64	0	0
GH -5 (Common Room Lights)	0	64	0	0
GH -7 (Common Room Lights)	0	64	0	0
GH -8 (Common Room Lights)	0	64	0	0
LH -1(DOUBLE ROOM)	0	64	0	0
LH-2(DOUBLE ROOM)	0	64	0	0
LH-3(TRIPLE ROOM)	0	64	0	0
LH-4(DOUBLE ROOM)	0	64	0	0
LH-5-A (SINGLE ROOM)	0	64	0	0
LH-5-B (SINGLE ROOM)	0	64	0	0
LH-6(TRIPLE ROOM)	0	64	0	0
LH -2(VARANDA LIGHTS)	0	64	0	0
LH -3 (VARANDA LIGHTS)	0	64	0	0
LH -4(VARANDA LIGHTS)	0	64	0	0
LH -5-A-(VARANDA LIGHTS)	0	64	0	0
LH -5-B- (VARANDA LIGHTS)	0	64	0	0
LH -6 (VARANDA LIGHTS)	0	64	0	0
LH -1 (Stair Case Lights)	0	64	0	0
LH -3 (Stair Case Lights)	0	64	0	0

LH -4 (Stair Case Lights)	0	64	0	0
LH -5-A (Stair Case Lights)	0	64	0	0
LH -5-B (Stair Case Lights)	0	64	0	0
LH -6 (Stair Case Lights)	0	64	0	0
LH -1 (Toilet Lights)	0	64	0	0
LH -2 (Toilet Lights)	0	64	0	0
LH -3 (Toilet Lights)	0	64	0	0
LH -4 (Toilet Lights)	0	64	0	0
LH -5-A (Toilet Lights)	0	64	0	0
LH -5-B(Toilet Lights)	0	64	0	0
LH -6 (Toilet Lights)	0	64	0	0
LH -1 (Common Room Lights)	0	64	0	0
LH -2 (Common Room Lights)	0	64	0	0
LH -3 (Common Room Lights)	0	64	0	0
LH -4 (Common Room Lights)	0	64	0	0
LH -5-A (Common Room Lights)	0	64	0	0
LH -5-B (Common Room Lights)	0	64	0	0
LH -6 (Common Room Lights)	0	64	0	0
TOTAL FITTINGS	**49**			**12544**

BLOCK NAME	10 W LED ROUND FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	10	0	0
INFORMATION TECHNOLOGY BLOCK	0	10	0	0
ECE OLD BLOCK	0	10	0	0
ECE ANNEX BLOCK	4	10	4	160
MECHANICAL ENGINEERING BLOCK	0	10	0	0
SOM BLOCK	0	10	0	0
SACE BLOCK	0	10	0	0
WORK SHOP BLOCK	0	10	0	0
CORE LAB BLOCK	0	10	0	0
EEE EAST WING	0	10	0	0
EEE WEST WING	0	10	0	0
CHEMICAL ENGINEERING BLOCK	0	10	0	0

BLOCK NAME	10 W LED ROUND FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
BIOMEDICAL ENGINEERING BLOCK	0	10	0	0
HUMANITIES BLOCK	0	10	0	0
ADMIN BLOCK	0	10	0	0
LIBRARY AND COMPUTER CENTRE	0	10	0	0
CARRIER DEVOLOPMENT CENTRE	0	10	0	0
MAIN CANTEEN	0	10	0	0
SUBSTATION -1	0	10	0	0
SUBSTATION -2	0	10	0	0
INNOVATION AND INGUBATION CENTRE	0	10	0	0
OLD SPORTS CENTRE	0	10	0	0
CSE ANNEX	0	10	0	0
GH -1(DOUBLE ROOM)	0	10	0	0
GH-2(DOUBLE ROOM)	0	10	0	0
GH-3(SINGLE ROOM)	0	10	0	0
GH-4(TRIPLE ROOM)	0	10	0	0
GH-5(TRIPLE ROOM)	0	10	0	0
GH-6(SINGLE ROOM)	0	10	0	0
GH-7(SINGLE ROOM)	0	10	0	0
GH-8(SINGLE ROOM)	0	10	0	0
GH -1VARANDA LIGHTS	0	10	0	0
GH -2 VARANDA LIGHTS	0	10	0	0
GH -3 VARANDA LIGHTS	0	10	0	0
GH -4 VARANDA LIGHTS	0	10	0	0
GH -5 VARANDA LIGHTS	0	10	0	0
GH -6 VARANDA LIGHTS	0	10	0	0
GH -7 VARANDA LIGHTS	0	10	0	0
GH -8 VARANDA LIGHTS	0	10	0	0
GH -4 (Stair Case Lights)	0	10	0	0
GH -5 (Stair Case Lights)	0	10	0	0
GH -6 (Stair Case Lights)	0	10	0	0
GH -7 (Stair Case Lights)	0	10	0	0
GH -8(Stair Case Lights)	0	10	0	0
GH -1(Toilet Lights)	0	10	0	0
GH -2(Toilet Lights)	0	10	0	0
GH -3(Toilet Lights)	0	10	0	0
GH -4 (Toilet Lights)	0	10	0	0

BLOCK NAME	10 W LED ROUND FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -5 (Toilet Lights)	0	10	0	0
GH -6 (Toilet Lights)	0	10	0	0
GH -7 (Toilet Lights)	0	10	0	0
GH -8 (Toilet Lights)	0	10	0	0
GH -1 (Common Room Lights)	0	10	0	0
GH -2 (Common Room Lights)	0	10	0	0
GH -3 (Common Room Lights)	0	10	0	0
GH -4 (Common Room Lights)	0	10	0	0
GH -5 (Common Room Lights)	0	10	0	0
GH -6 (Common Room Lights)	0	10	0	0
GH -7 (Common Room Lights)	0	10	0	0
GH -8 (Common Room Lights)	0	10	0	0
LH -1(DOUBLE ROOM)	0	10	0	0
LH-2(DOUBLE ROOM)	0	10	0	0
LH-3(TRIPLE ROOM)	0	10	0	0
LH-4(DOUBLE ROOM)	0	10	0	0
LH-5-A(SINGLE ROOM)	0	10	0	0
LH-5-B(SINGLE ROOM)	0	10	0	0
LH-6(TRIPLE ROOM)	0	10	0	0
LH -1(VARANDA LIGHTS)	0	10	0	0
LH -2(VARANDA LIGHTS)	0	10	0	0
LH -3 (VARANDA LIGHTS)	0	10	0	0
LH -4(VARANDA LIGHTS)	0	10	0	0
LH -5-A-(VARANDA LIGHTS)	0	10	0	0
LH -5-B-(VARANDA LIGHTS)	0	10	0	0
LH -6 (VARANDA LIGHTS)	0	10	0	0
LH -1 (Stair Case Lights)	0	10	0	0
LH -2 (Stair Case Lights)	0	10	0	0
LH -3 (Stair Case Lights)	0	10	0	0
LH -4 (Stair Case Lights)	0	10	0	0
LH -5-A (Stair Case Lights)	0	10	0	0
LH -5-B (Stair Case Lights)	0	10	0	0
LH -6 (Stair Case Lights)	0	10	0	0
LH -1 (Toilet Lights)	0	10	0	0
LH -2 (Toilet Lights)	0	10	0	0
LH -3 (Toilet Lights)	0	10	0	0
LH -4 (Toilet Lights)	0	10	0	0

BLOCK NAME	10 W LED ROUND FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -5-A (Toilet Lights)	0	10	0	0
LH -5-B(Toilet Lights)	0	10	0	0
LH -6 (Toilet Lights)	0	10	0	0
LH -1 (Common Room Lights)	0	10	0	0
LH -2 (Common Room Lights)	**0**	**10**	**0**	**0**
LH -3 (Common Room Lights)	0	10	0	0
LH -4 (Common Room Lights)	0	10	0	0
LH -5-A (Common Room Lights)	0	10	0	0
LH -5-B (Common Room Lights)	0	10	0	0
LH -6 (Common Room Lights)	0	10	0	0
TOTAL FITTINGS	**4**			**160**

BLOCK NAME	CFL 18 W FALCEILING FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	18	0	0
INFORMATION TECHNOLOGY BLOCK	0	18	0	0
ECE OLD BLOCK	0	18	0	0
ECE ANNEX BLOCK	17	18	4	1224
MECHANICAL ENGINEERING BLOCK	0	18	0	0
SOM BLOCK	0	18	0	0
SACE BLOCK	0	18	0	0
WORK SHOP BLOCK	0	18	0	0
CORE LAB BLOCK	0	18	0	0
EEE EAST WING	0	18	0	0
EEE WEST WING	0	18	0	0
CHEMICAL ENGINEERING BLOCK	0	18	0	0
BIOMEDICAL ENGINEERING BLOCK	0	18	0	0
HUMANITIES BLOCK	0	18	0	0
ADMIN BLOCK	23	18	4	1656
LIBRARY AND COMPUTER CENTRE	0	18	0	0
CARRIER DEVOLOPMENT CENTRE	0	18	0	0
MAIN CANTEEN	0	18	0	0

BLOCK NAME	CFL 18 W FALCEILING FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
SUBSTATION -1	0	18	0	0
SUBSTATION -2	0	18	0	0
INNOVATION AND INGUBATION CENTRE	0	18	0	0
OLD SPORTS CENTRE	0	18	0	0
CSE ANNEX	0	18	0	0
GH -1(DOUBLE ROOM)	0	18	0	0
GH-2(DOUBLE ROOM)	0	18	0	0
GH-3(SINGLE ROOM)	0	18	0	0
GH-4(TRIPLE ROOM)	0	18	0	0
GH-5(TRIPLE ROOM)	0	18	0	0
GH-6(SINGLE ROOM)	0	18	0	0
GH-7(SINGLE ROOM)	0	18	0	0
GH-8(SINGLE ROOM)	0	18	0	0
GH -1VARANDA LIGHTS	0	18	0	0
GH -2 VARANDA LIGHTS	0	18	0	0
GH -3 VARANDA LIGHTS	0	18	0	0
GH -4 VARANDA LIGHTS	0	18	0	0
GH -5 VARANDA LIGHTS	0	18	0	0
GH -6 VARANDA LIGHTS	0	18	0	0
GH -7 VARANDA LIGHTS	0	18	0	0
GH -8 VARANDA LIGHTS	0	18	0	0
GH -4 (Stair Case Lights)	0	18	0	0
GH -5 (Stair Case Lights)	0	18	0	0
GH -6 (Stair Case Lights)	0	18	0	0
GH -7 (Stair Case Lights)	0	18	0	0
GH -8(Stair Case Lights)	0	18	0	0
GH -1(Toilet Lights)	0	18	0	0
GH -2(Toilet Lights)	0	18	0	0
GH -3(Toilet Lights)	0	18	0	0
GH -4 (Toilet Lights)	0	18	0	0
GH -5 (Toilet Lights)	0	18	0	0
GH -6 (Toilet Lights)	0	18	0	0
GH -7 (Toilet Lights)	0	18	0	0
GH -8 (Toilet Lights)	0	18	0	0
GH -1 (Common Room Lights)	0	18	0	0
GH -2 (Common Room Lights)	0	18	0	0
GH -3 (Common Room Lights)	0	18	0	0

BLOCK NAME	CFL 18 W FALCEILING FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -4 (Common Room Lights)	0	18	0	0
GH -5 (Common Room Lights)	0	18	0	0
GH -6 (Common Room Lights)	0	18	0	0
GH -7 (Common Room Lights)	0	18	0	0
GH -8 (Common Room Lights)	0	18	0	0
LH -1(DOUBLE ROOM)	0	18	0	0
LH-2(DOUBLE ROOM)	0	18	0	0
LH-3(TRIPLE ROOM)	0	18	0	0
LH-4(DOUBLE ROOM)	0	18	0	0
LH-5-A(SINGLE ROOM)	0	18	0	0
LH-5-B(SINGLE ROOM)	0	18	0	0
LH-6(TRIPLE ROOM)	0	18	0	0
LH -1(VARANDA LIGHTS)	0	18	0	0
LH -2(VARANDA LIGHTS)	0	18	0	0
LH -3 (VARANDA LIGHTS)	0	18	0	0
LH -4(VARANDA LIGHTS)	0	18	0	0
LH -5-A-(VARANDA LIGHTS)	0	18	0	0
LH -5-B-(VARANDA LIGHTS)	0	18	0	0
LH -6 (VARANDA LIGHTS)	0	18	0	0
LH -1 (Stair Case Lights)	0	18	0	0
LH -2 (Stair Case Lights)	0	18	0	0
LH -3 (Stair Case Lights)	0	18	0	0
LH -4 (Stair Case Lights)	0	18	0	0
LH -5-A (Stair Case Lights)	0	18	0	0
LH -5-B (Stair Case Lights)	0	18	0	0
LH -6 (Stair Case Lights)	0	18	0	0
LH -1 (Toilet Lights)	0	18	0	0
LH -2 (Toilet Lights)	0	18	0	0
LH -3 (Toilet Lights)	0	18	0	0
LH -4 (Toilet Lights)	0	18	0	0
LH -5-A (Toilet Lights)	0	18	0	0
LH -5-B(Toilet Lights)	0	18	0	0
LH -6 (Toilet Lights)	0	18	0	0
LH -1 (Common Room Lights)	0	18	0	0
LH -2 (Common Room Lights)	0	18	0	0
LH -3 (Common Room Lights)	0	18	0	0
LH -4 (Common Room Lights)	0	18	0	0

BLOCK NAME	CFL 18 W FALCEILING FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -5-A (Common Room Lights)	0	18	0	0
LH -5-B (Common Room Lights)	0	18	0	0
LH -6 (Common Room Lights)	0	18	0	0
TOTAL FITTINGS	**40**			**2880**

BLOCK NAME	250 W FLOOD LIGHTS			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	250	0	0
INFORMATION TECHNOLOGY BLOCK	0	250	0	0
ECE OLD BLOCK	0	250	0	0
ECE ANNEX BLOCK	0	250	0	0
MECHANICAL ENGINEERING BLOCK	0	250	0	0
SOM BLOCK	0	250	0	0
SACE BLOCK	0	250	0	0
WORK SHOP BLOCK	0	250	0	0
CORE LAB BLOCK	0	250	0	0
EEE EAST WING	0	250	0	0
EEE WEST WING	0	250	0	0
CHEMICAL ENGINEERING BLOCK	0	250	0	0
BIOMEDICAL ENGINEERING BLOCK	0	250	0	0
HUMANITIES BLOCK	0	250	0	0
ADMIN BLOCK	0	250	0	0
LIBRARY AND COMPUTER CENTRE	0	250	0	0
CARRIER DEVOLOPMENT CENTRE	0	250	0	0
MAIN CANTEEN	0	250	0	0
SUBSTATION -1	0	250	0	0
SUBSTATION -2	0	250	0	0
INNOVATION AND INGUBATION CENTRE	0	250	0	0
OLD SPORTS CENTRE	8	250	4	8000
CSE ANNEX	0	250	0	0
GH -1(DOUBLE ROOM)	0	250	0	0
GH-2(DOUBLE ROOM)	0	250	0	0

BLOCK NAME	250 W FLOOD LIGHTS			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH-3(SINGLE ROOM)	0	250	0	0
GH-4(TRIPLE ROOM)	0	250	0	0
GH-5(TRIPLE ROOM)	0	250	0	0
GH-6(SINGLE ROOM)	0	250	0	0
GH-7(SINGLE ROOM)	0	250	0	0
GH-8(SINGLE ROOM)	0	250	0	0
GH -1VARANDA LIGHTS	0	250	0	0
GH -2 VARANDA LIGHTS	0	250	0	0
GH -3 VARANDA LIGHTS	0	250	0	0
GH -4 VARANDA LIGHTS	0	250	0	0
GH -5 VARANDA LIGHTS	0	250	0	0
GH -6 VARANDA LIGHTS	0	250	0	0
GH -7 VARANDA LIGHTS	0	250	0	0
GH -8 VARANDA LIGHTS	0	250	0	0
GH -4 (Stair Case Lights)	0	250	0	0
GH -5 (Stair Case Lights)	0	250	0	0
GH -6 (Stair Case Lights)	0	250	0	0
GH -7 (Stair Case Lights)	0	250	0	0
GH -8(Stair Case Lights)	0	250	0	0
GH -1(Toilet Lights)	0	250	0	0
GH -2(Toilet Lights)	0	250	0	0
GH -3(Toilet Lights)	0	250	0	0
GH -4 (Toilet Lights)	0	250	0	0
GH -5 (Toilet Lights)	0	250	0	0
GH -6 (Toilet Lights)	0	250	0	0
GH -7 (Toilet Lights)	0	250	0	0
GH -8 (Toilet Lights)	0	250	0	0
GH -1 (Common Room Lights)	0	250	0	0
GH -2 (Common Room Lights)	0	250	0	0
GH -3 (Common Room Lights)	0	250	0	0
GH -4 (Common Room Lights)	0	250	0	0
GH -5 (Common Room Lights)	0	250	0	0
GH -6 (Common Room Lights)	0	250	0	0
GH -7 (Common Room Lights)	0	250	0	0
GH -8 (Common Room Lights)	0	250	0	0
LH -1(DOUBLE ROOM)	0	250	0	0
LH-2(DOUBLE ROOM)	0	250	0	0
LH-3(TRIPLE ROOM)	0	250	0	0

BLOCK NAME	250 W FLOOD LIGHTS			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH-4(DOUBLE ROOM)	0	250	0	0
LH-5-A(SINGLE ROOM)	0	250	0	0
LH-5-B(SINGLE ROOM)	0	250	0	0
LH-6(TRIPLE ROOM)	0	250	0	0
LH -1(VARANDA LIGHTS)	0	250	0	0
LH -2(VARANDA LIGHTS)	0	250	0	0
LH -3 (VARANDA LIGHTS)	0	250	0	0
LH -4(VARANDA LIGHTS)	0	250	0	0
LH -5-A-(VARANDA LIGHTS)	0	250	0	0
LH -5-B-(VARANDA LIGHTS)	0	250	0	0
LH -6 (VARANDA LIGHTS)	0	250	0	0
LH -1 (Stair Case Lights)	0	250	0	0
LH -2 (Stair Case Lights)	0	250	0	0
LH -3 (Stair Case Lights)	0	250	0	0
LH -4 (Stair Case Lights)	0	250	0	0
LH -5-A (Stair Case Lights)	0	250	0	0
LH -5-B (Stair Case Lights)	0	250	0	0
LH -6 (Stair Case Lights)	0	250	0	0
LH -1 (Toilet Lights)	0	250	0	0
LH -2 (Toilet Lights)	0	250	0	0
LH -3 (Toilet Lights)	0	250	0	0
LH -4 (Toilet Lights)	0	250	0	0
LH -5-A (Toilet Lights)	0	250	0	0
LH -5-B(Toilet Lights)	0	250	0	0
LH -6 (Toilet Lights)	0	250	0	0
LH -1 (Common Room Lights)	0	250	0	0
LH -2 (Common Room Lights)	0	250	0	0
LH -3 (Common Room Lights)	0	250	0	0
LH -4 (Common Room Lights)	0	250	0	0
LH -5-A (Common Room Lights)	0	250	0	0
LH -5-B (Common Room Lights)	0	250	0	0
LH -6 (Common Room Lights)	0	250	0	0
TOTAL FITTINGS	**8**			**8000**

BLOCK NAME	250 W.MID WAY FLOOD LIGHT			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	250	0	0
INFORMATION TECHNOLOGY BLOCK	0	250	0	0
ECE OLD BLOCK	0	250	0	0
ECE ANNEX BLOCK	0	250	0	0
MECHANICAL ENGINEERING BLOCK	0	250	0	0
SOM BLOCK	0	250	0	0
SACE BLOCK	0	250	0	0
WORK SHOP BLOCK	0	250	0	0
CORE LAB BLOCK	0	250	0	0
EEE EAST WING	0	250	0	0
EEE WEST WING	0	250	0	0
CHEMICAL ENGINEERING BLOCK	0	250	0	0
BIOMEDICAL ENGINEERING BLOCK	0	250	0	0
HUMANITIES BLOCK	0	250	0	0
ADMIN BLOCK	0	250	0	0
LIBRARY AND COMPUTER CENTRE	0	250	0	0
CARRIER DEVOLOPMENT CENTRE	0	250	0	0
MAIN CANTEEN	0	250	0	0
SUBSTATION -1	0	250	0	0
SUBSTATION -2	0	250	0	0
INNOVATION AND INGUBATION CENTRE	0	250	0	0
OLD SPORTS CENTRE	10	250	4	10000
CSE ANNEX	0	250	0	0
GH -1(DOUBLE ROOM)	0	250	0	0
GH-2(DOUBLE ROOM)	0	250	0	0
GH-3(SINGLE ROOM)	0	250	0	0
GH-4(TRIPLE ROOM)	0	250	0	0
GH-5(TRIPLE ROOM)	0	250	0	0
GH-6(SINGLE ROOM)	0	250	0	0
GH-7(SINGLE ROOM)	0	250	0	0
GH-8(SINGLE ROOM)	0	250	0	0
GH -1VARANDA LIGHTS	0	250	0	0
GH -2 VARANDA LIGHTS	0	250	0	0
GH -3 VARANDA LIGHTS	0	250	0	0
GH -4 VARANDA LIGHTS	0	250	0	0

BLOCK NAME	250 W.MID WAY FLOOD LIGHT			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -5 VARANDA LIGHTS	0	250	0	0
GH -6 VARANDA LIGHTS	0	250	0	0
GH -7 VARANDA LIGHTS	0	250	0	0
GH -8 VARANDA LIGHTS	0	250	0	0
GH -4 (Stair Case Lights)	0	250	0	0
GH -5 (Stair Case Lights)	0	250	0	0
GH -6 (Stair Case Lights)	0	250	0	0
GH -7 (Stair Case Lights)	0	250	0	0
GH -8(Stair Case Lights)	0	250	0	0
GH -1(Toilet Lights)	0	250	0	0
GH -2(Toilet Lights)	0	250	0	0
GH -3(Toilet Lights)	0	250	0	0
GH -4 (Toilet Lights)	0	250	0	0
GH -5 (Toilet Lights)	0	250	0	0
GH -6 (Toilet Lights)	0	250	0	0
GH -7 (Toilet Lights)	0	250	0	0
GH -8 (Toilet Lights)	0	250	0	0
GH -1 (Common Room Lights)	0	250	0	0
GH -2 (Common Room Lights)	0	250	0	0
GH -3 (Common Room Lights)	0	250	0	0
GH -4 (Common Room Lights)	0	250	0	0
GH -5 (Common Room Lights)	0	250	0	0
GH -6 (Common Room Lights)	0	250	0	0
GH -7 (Common Room Lights)	0	250	0	0
GH -8 (Common Room Lights)	0	250	0	0
LH -1(DOUBLE ROOM)	0	250	0	0
LH-2(DOUBLE ROOM)	0	250	0	0
LH-3(TRIPLE ROOM)	0	250	0	0
LH-4(DOUBLE ROOM)	0	250	0	0
LH-5-A(SINGLE ROOM)	0	250	0	0
LH-5-B(SINGLE ROOM)	0	250	0	0
LH-6(TRIPLE ROOM)	0	250	0	0
LH -1(VARANDA LIGHTS)	0	250	0	0
LH -2(VARANDA LIGHTS)	0	250	0	0
LH -3 (VARANDA LIGHTS)	0	250	0	0
LH -4(VARANDA LIGHTS)	0	250	0	0
LH -5-A-(VARANDA LIGHTS)	0	250	0	0

BLOCK NAME	250 W.MID WAY FLOOD LIGHT			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -5-B-(VARANDA LIGHTS)	0	250	0	0
LH -6 (VARANDA LIGHTS)	0	250	0	0
LH -1 (Stair Case Lights)	0	250	0	0
LH -2 (Stair Case Lights)	0	250	0	0
LH -3 (Stair Case Lights)	0	250	0	0
LH -4 (Stair Case Lights)	0	250	0	0
LH -5-A (Stair Case Lights)	0	250	0	0
LH -5-B (Stair Case Lights)	0	250	0	0
LH -6 (Stair Case Lights)	0	250	0	0
LH -1 (Toilet Lights)	0	250	0	0
LH -2 (Toilet Lights)	0	250	0	0
LH -3 (Toilet Lights)	0	250	0	0
LH -4 (Toilet Lights)	0	250	0	0
LH -5-A (Toilet Lights)	0	250	0	0
LH -5-B(Toilet Lights)	0	250	0	0
LH -6 (Toilet Lights)	0	250	0	0
LH -1 (Common Room Lights)	0	250	0	0
LH -2 (Common Room Lights)	0	250	0	0
LH -3 (Common Room Lights)	0	250	0	0
LH -4 (Common Room Lights)	0	250	0	0
LH -5-A (Common Room Lights)	0	250	0	0
LH -5-B (Common Room Lights)	0	250	0	0
LH -6 (Common Room Lights)	0	250	0	0
TOTAL FITTINGS	**10**			**10000**

BLOCK NAME	6 INCHES SQUARE LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	6	0	0
INFORMATION TECHNOLOGY BLOCK	0	6	0	0
ECE OLD BLOCK	0	6	0	0
ECE ANNEX BLOCK	0	6	0	0
MECHANICAL ENGINEERING BLOCK	0	6	0	0
SOM BLOCK	0	6	0	0
SACE BLOCK	0	6	0	0

BLOCK NAME	6 INCHES SQUARE LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
WORK SHOP BLOCK	0	6	0	0
CORE LAB BLOCK	0	6	0	0
EEE EAST WING	0	6	0	0
EEE WEST WING	0	6	0	0
CHEMICAL ENGINEERING BLOCK	0	6	0	0
BIOMEDICAL ENGINEERING BLOCK	0	6	0	0
HUMANITIES BLOCK	0	6	0	0
ADMIN BLOCK	0	6	0	0
LIBRARY AND COMPUTER CENTRE	0	6	0	0
CARRIER DEVOLOPMENT CENTRE	0	6	0	0
MAIN CANTEEN	0	6	0	0
SUBSTATION -1	0	6	0	0
SUBSTATION -2	0	6	0	0
INNOVATION AND INGUBATION CENTRE	3	6	4	72
OLD SPORTS CENTRE	4	6	4	96
CSE ANNEX	0	6	0	0
GH -1(DOUBLE ROOM)	0	6	0	0
GH-2(DOUBLE ROOM)	0	6	0	0
GH-3(SINGLE ROOM)	0	6	0	0
GH-4(TRIPLE ROOM)	0	6	0	0
GH-5(TRIPLE ROOM)	0	6	0	0
GH-6(SINGLE ROOM)	0	6	0	0
GH-7(SINGLE ROOM)	0	6	0	0
GH-8(SINGLE ROOM)	0	6	0	0
GH -1VARANDA LIGHTS	0	6	0	0
GH -2 VARANDA LIGHTS	0	6	0	0
GH -3 VARANDA LIGHTS	0	6	0	0
GH -4 VARANDA LIGHTS	0	6	0	0
GH -5 VARANDA LIGHTS	0	6	0	0
GH -6 VARANDA LIGHTS	0	6	0	0
GH -7 VARANDA LIGHTS	0	6	0	0
GH -8 VARANDA LIGHTS	0	6	0	0
GH -4 (Stair Case Lights)	0	6	0	0
GH -5 (Stair Case Lights)	0	6	0	0
GH -6 (Stair Case Lights)	0	6	0	0
GH -7 (Stair Case Lights)	0	6	0	0
GH -8(Stair Case Lights)	0	6	0	0
GH -1(Toilet Lights)	0	6	0	0
GH -2(Toilet Lights)	0	6	0	0

BLOCK NAME	6 INCHES SQUARE LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -3(Toilet Lights)	0	6	0	0
GH -4 (Toilet Lights)	0	6	0	0
GH -5 (Toilet Lights)	0	6	0	0
GH -6 (Toilet Lights)	0	6	0	0
GH -7 (Toilet Lights)	0	6	0	0
GH -8 (Toilet Lights)	0	6	0	0
GH -1 (Common Room Lights)	0	6	0	0
GH -2 (Common Room Lights)	0	6	0	0
GH -3 (Common Room Lights)	0	6	0	0
GH -4 (Common Room Lights)	0	6	0	0
GH -5 (Common Room Lights)	0	6	0	0
GH -6 (Common Room Lights)	0	6	0	0
GH -7 (Common Room Lights)	0	6	0	0
GH -8 (Common Room Lights)	0	6	0	0
LH -1(DOUBLE ROOM)	0	6	0	0
LH-2(DOUBLE ROOM)	0	6	0	0
LH-3(TRIPLE ROOM)	0	6	0	0
LH-4(DOUBLE ROOM)	0	6	0	0
LH-5-A(SINGLE ROOM)	0	6	0	0
LH-5-B(SINGLE ROOM)	0	6	0	0
LH-6(TRIPLE ROOM)	0	6	0	0
LH -1(VARANDA LIGHTS)	0	6	0	0
LH -2(VARANDA LIGHTS)	0	6	0	0
LH -3 (VARANDA LIGHTS)	0	6	0	0
LH -4(VARANDA LIGHTS)	0	6	0	0
LH -5-A-(VARANDA LIGHTS)	0	6	0	0
LH -5-B-(VARANDA LIGHTS)	0	6	0	0
LH -6 (VARANDA LIGHTS)	0	6	0	0
LH -1 (Stair Case Lights)	0	6	0	0
LH -2 (Stair Case Lights)	0	6	0	0
LH -3 (Stair Case Lights)	0	6	0	0
LH -4 (Stair Case Lights)	0	6	0	0
LH -5-A (Stair Case Lights)	0	6	0	0
LH -5-B (Stair Case Lights)	0	6	0	0
LH -6 (Stair Case Lights)	0	6	0	0
LH -1 (Toilet Lights)	0	6	0	0
LH -2 (Toilet Lights)	0	6	0	0
LH -3 (Toilet Lights)	0	6	0	0
LH -4 (Toilet Lights)	0	6	0	0

BLOCK NAME	6 INCHES SQUARE LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -5-A (Toilet Lights)	0	6	0	0
LH -5-B(Toilet Lights)	0	6	0	0
LH -6 (Toilet Lights)	0	6	0	0
LH -1 (Common Room Lights)	0	6	0	0
LH -2 (Common Room Lights)	0	6	0	0
LH -3 (Common Room Lights)	0	6	0	0
LH -4 (Common Room Lights)	0	6	0	0
LH -5-A (Common Room Lights)	0	6	0	0
LH -5-B (Common Room Lights)	0	6	0	0
LH -6 (Common Room Lights)	0	6	0	0
TOTAL FITTINGS	**7**			**168**

BLOCK NAME	6 INCHES ROUND LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	6	0	0
INFORMATION TECHNOLOGY BLOCK	0	6	0	0
ECE OLD BLOCK	0	6	0	0
ECE ANNEX BLOCK	0	6	0	0
MECHANICAL ENGINEERING BLOCK	0	6	0	0
SOM BLOCK	0	6	0	0
SACE BLOCK	0	6	0	0
WORK SHOP BLOCK	0	6	0	0
CORE LAB BLOCK	0	6	0	0
EEE EAST WING	0	6	0	0
EEE WEST WING	0	6	0	0
CHEMICAL ENGINEERING BLOCK	0	6	0	0
BIOMEDICAL ENGINEERING BLOCK	0	6	0	0
HUMANITIES BLOCK	0	6	0	0
ADMIN BLOCK	3	6	4	72
LIBRARY AND COMPUTER CENTRE	0	6	0	0
CARRIER DEVOLOPMENT CENTRE	83	6	4	1992
MAIN CANTEEN	0	6	0	0
SUBSTATION -1	0	6	0	0
SUBSTATION -2	0	6	0	0

BLOCK NAME	6 INCHES ROUND LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
INNOVATION AND INGUBATION CENTRE	0	6	0	0
OLD SPORTS CENTRE	0	6	0	0
CSE ANNEX	68	6	4	1632
GH -1(DOUBLE ROOM)	0	6	0	0
GH-2(DOUBLE ROOM)	0	6	0	0
GH-3(SINGLE ROOM)	0	6	0	0
GH-4(TRIPLE ROOM)	0	6	0	0
GH-5(TRIPLE ROOM)	0	6	0	0
GH-6(SINGLE ROOM)	0	6	0	0
GH-7(SINGLE ROOM)	0	6	0	0
GH-8(SINGLE ROOM)	0	6	0	0
GH -1VARANDA LIGHTS	0	6	0	0
GH -2 VARANDA LIGHTS	0	6	0	0
GH -3 VARANDA LIGHTS	0	6	0	0
GH -4 VARANDA LIGHTS	0	6	0	0
GH -5 VARANDA LIGHTS	0	6	0	0
GH -6 VARANDA LIGHTS	0	6	0	0
GH -7 VARANDA LIGHTS	0	6	0	0
GH -8 VARANDA LIGHTS	0	6	0	0
GH -4 (Stair Case Lights)	0	6	0	0
GH -5 (Stair Case Lights)	0	6	0	0
GH -6 (Stair Case Lights)	0	6	0	0
GH -7 (Stair Case Lights)	0	6	0	0
GH -8(Stair Case Lights)	0	6	0	0
GH -1(Toilet Lights)	0	6	0	0
GH -2(Toilet Lights)	0	6	0	0
GH -3(Toilet Lights)	0	6	0	0
GH -4 (Toilet Lights)	0	6	0	0
GH -5 (Toilet Lights)	0	6	0	0
GH -6 (Toilet Lights)	0	6	0	0
GH -7 (Toilet Lights)	0	6	0	0
GH -8 (Toilet Lights)	0	6	0	0
GH -1 (Common Room Lights)	0	6	0	0
GH -2 (Common Room Lights)	0	6	0	0
GH -3 (Common Room Lights)	0	6	0	0
GH -4 (Common Room Lights)	0	6	0	0
GH -5 (Common Room Lights)	0	6	0	0
GH -6 (Common Room Lights)	0	6	0	0

BLOCK NAME	6 INCHES ROUND LED FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -7 (Common Room Lights)	0	6	0	0
GH -8 (Common Room Lights)	0	6	0	0
LH -1(DOUBLE ROOM)	0	6	0	0
LH-2(DOUBLE ROOM)	0	6	0	0
LH-3(TRIPLE ROOM)	0	6	0	0
LH-4(DOUBLE ROOM)	0	6	0	0
LH-5-A(SINGLE ROOM)	0	6	0	0
LH-5-B(SINGLE ROOM)	0	6	0	0
LH-6(TRIPLE ROOM)	0	6	0	0
LH -1(VARANDA LIGHTS)	0	6	0	0
LH -2(VARANDA LIGHTS)	0	6	0	0
LH -3 (VARANDA LIGHTS)	0	6	0	0
LH -4(VARANDA LIGHTS)	0	6	0	0
LH -5-A-(VARANDA LIGHTS)	0	6	0	0
LH -5-B-(VARANDA LIGHTS)	0	6	0	0
LH -6 (VARANDA LIGHTS)	0	6	0	0
LH -1 (Stair Case Lights)	0	6	0	0
LH -2 (Stair Case Lights)	0	6	0	0
LH -3 (Stair Case Lights)	0	6	0	0
LH -4 (Stair Case Lights)	0	6	0	0
LH -5-A (Stair Case Lights)	0	6	0	0
LH -5-B (Stair Case Lights)	0	6	0	0
LH -6 (Stair Case Lights)	0	6	0	0
LH -1 (Toilet Lights)	0	6	0	0
LH -2 (Toilet Lights)	0	6	0	0
LH -3 (Toilet Lights)	0	6	0	0
LH -4 (Toilet Lights)	0	6	0	0
LH -5-A (Toilet Lights)	0	6	0	0
LH -5-B(Toilet Lights)	0	6	0	0
LH -6 (Toilet Lights)	0	6	0	0
LH -1 (Common Room Lights)	0	6	0	0
LH -2 (Common Room Lights)	0	6	0	0
LH -3 (Common Room Lights)	0	6	0	0
LH -4 (Common Room Lights)	0	6	0	0
LH -5-A (Common Room Lights)	0	6	0	0
LH -5-B (Common Room Lights)	0	6	0	0
LH -6 (Common Room Lights)	0	6	0	0
TOTAL FITTINGS	**154**			**3696**

BLOCK NAME	2*18 W LED TUBE FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	36	0	0
INFORMATION TECHNOLOGY BLOCK	0	36	0	0
ECE OLD BLOCK	0	36	0	0
ECE ANNEX BLOCK	0	36	0	0
MECHANICAL ENGINEERING BLOCK	0	36	0	0
SOM BLOCK	0	36	0	0
SACE BLOCK	0	36	0	0
WORK SHOP BLOCK	0	36	0	0
CORE LAB BLOCK	0	36	0	0
EEE EAST WING	0	36	0	0
EEE WEST WING	0	36	0	0
CHEMICAL ENGINEERING BLOCK	0	36	0	0
BIOMEDICAL ENGINEERING BLOCK	0	36	0	0
HUMANITIES BLOCK	0	36	0	0
ADMIN BLOCK	89	36	4	12816
LIBRARY AND COMPUTER CENTRE	0	36	0	0
CARRIER DEVOLOPMENT CENTRE	0	36	0	0
MAIN CANTEEN	0	36	0	0
SUBSTATION -1	0	36	0	0
SUBSTATION -2	0	36	0	0
INNOVATION AND INGUBATION CENTRE	0	36	0	0
OLD SPORTS CENTRE	0	36	0	0
CSE ANNEX	0	36	0	0
GH -1(DOUBLE ROOM)	0	36	0	0
GH-2(DOUBLE ROOM)	0	36	0	0
GH-3(SINGLE ROOM)	0	36	0	0
GH-4(TRIPLE ROOM)	0	36	0	0
GH-5(TRIPLE ROOM)	0	36	0	0
GH-6(SINGLE ROOM)	0	36	0	0
GH-7(SINGLE ROOM)	0	36	0	0
GH-8(SINGLE ROOM)	0	36	0	0
GH -1VARANDA LIGHTS	0	36	0	0
GH -2 VARANDA LIGHTS	0	36	0	0
GH -3 VARANDA LIGHTS	0	36	0	0
GH -4 VARANDA LIGHTS	0	36	0	0
GH -5 VARANDA LIGHTS	0	36	0	0

BLOCK NAME	2*18 W LED TUBE FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -6 VARANDA LIGHTS	0	36	0	0
GH -7 VARANDA LIGHTS	0	36	0	0
GH -8 VARANDA LIGHTS	0	36	0	0
GH -4 (Stair Case Lights)	0	36	0	0
GH -5 (Stair Case Lights)	0	36	0	0
GH -6 (Stair Case Lights)	0	36	0	0
GH -7 (Stair Case Lights)	0	36	0	0
GH -8(Stair Case Lights)	0	36	0	0
GH -1(Toilet Lights)	0	36	0	0
GH -2(Toilet Lights)	0	36	0	0
GH -3(Toilet Lights)	0	36	0	0
GH -4 (Toilet Lights)	0	36	0	0
GH -5 (Toilet Lights)	0	36	0	0
GH -6 (Toilet Lights)	0	36	0	0
GH -7 (Toilet Lights)	0	36	0	0
GH -8 (Toilet Lights)	0	36	0	0
GH -1 (Common Room Lights)	0	36	0	0
GH -2 (Common Room Lights)	0	36	0	0
GH -3 (Common Room Lights)	0	36	0	0
GH -4 (Common Room Lights)	0	36	0	0
GH -5 (Common Room Lights)	0	36	0	0
GH -6 (Common Room Lights)	0	36	0	0
GH -7 (Common Room Lights)	0	36	0	0
GH -8 (Common Room Lights)	0	36	0	0
LH -1(DOUBLE ROOM)	0	36	0	0
LH-2(DOUBLE ROOM)	0	36	0	0
LH-3(TRIPLE ROOM)	0	36	0	0
LH-4(DOUBLE ROOM)	0	36	0	0
LH-5-A(SINGLE ROOM)	0	36	0	0
LH-5-B(SINGLE ROOM)	0	36	0	0
LH-6(TRIPLE ROOM)	0	36	0	0
LH -1(VARANDA LIGHTS)	0	36	0	0
LH -2(VARANDA LIGHTS)	0	36	0	0
LH -3 (VARANDA LIGHTS)	0	36	0	0
LH -4(VARANDA LIGHTS)	0	36	0	0
LH -5-A-(VARANDA LIGHTS)	0	36	0	0
LH -5-B-(VARANDA LIGHTS)	0	36	0	0
LH -6 (VARANDA LIGHTS)	0	36	0	0
LH -1 (Stair Case Lights)	0	36	0	0

BLOCK NAME	2*18 W LED TUBE FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -2 (Stair Case Lights)	0	36	0	0
LH -3 (Stair Case Lights)	0	36	0	0
LH -4 (Stair Case Lights)	0	36	0	0
LH -5-A (Stair Case Lights)	0	36	0	0
LH -5-B (Stair Case Lights)	0	36	0	0
LH -6 (Stair Case Lights)	0	36	0	0
LH -1 (Toilet Lights)	0	36	0	0
LH -2 (Toilet Lights)	0	36	0	0
LH -3 (Toilet Lights)	0	36	0	0
LH -4 (Toilet Lights)	0	36	0	0
LH -5-A (Toilet Lights)	0	36	0	0
LH -5-B(Toilet Lights)	0	36	0	0
LH -6 (Toilet Lights)	0	36	0	0
LH -1 (Common Room Lights)	0	36	0	0
LH -2 (Common Room Lights)	0	36	0	0
LH -3 (Common Room Lights)	0	36	0	0
LH -4 (Common Room Lights)	0	36	0	0
LH -5-A (Common Room Lights)	0	36	0	0
LH -5-B (Common Room Lights)	0	36	0	0
LH -6 (Common Room Lights)	0	36	0	0
TOTAL FITTINGS	**89**			**12816**

BLOCK NAME	1*18 W 2 FEET TUBE FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	18	0	0
INFORMATION TECHNOLOGY BLOCK	0	18	0	0
ECE OLD BLOCK	0	18	0	0
ECE ANNEX BLOCK	0	18	0	0
MECHANICAL ENGINEERING BLOCK	0	18	0	0
SOM BLOCK	0	18	0	0
SACE BLOCK	0	18	0	0
WORK SHOP BLOCK	0	18	0	0
CORE LAB BLOCK	0	18	0	0
EEE EAST WING	0	18	0	0

BLOCK NAME	1*18 W 2 FEET TUBE FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
EEE WEST WING	0	18	0	0
CHEMICAL ENGINEERING BLOCK	0	18	0	0
BIOMEDICAL ENGINEERING BLOCK	0	18	0	0
HUMANITIES BLOCK	0	18	0	0
ADMIN BLOCK	12	18	4	864
LIBRARY AND COMPUTER CENTRE	0	18	0	0
CARRIER DEVOLOPMENT CENTRE	0	18	0	0
MAIN CANTEEN	0	18	0	0
SUBSTATION -1	0	18	0	0
SUBSTATION -2	0	18	0	0
INNOVATION AND INGUBATION CENTRE	0	18	0	0
OLD SPORTS CENTRE	0	18	0	0
CSE ANNEX	0	18	0	0
GH -1(DOUBLE ROOM)	0	18	0	0
GH-2(DOUBLE ROOM)	0	18	0	0
GH-3(SINGLE ROOM)	0	18	0	0
GH-4(TRIPLE ROOM)	0	18	0	0
GH-5(TRIPLE ROOM)	0	18	0	0
GH-6(SINGLE ROOM)	0	18	0	0
GH-7(SINGLE ROOM)	0	18	0	0
GH-8(SINGLE ROOM)	0	18	0	0
GH -1VARANDA LIGHTS	0	18	0	0
GH -2 VARANDA LIGHTS	0	18	0	0
GH -3 VARANDA LIGHTS	0	18	0	0
GH -4 VARANDA LIGHTS	0	18	0	0
GH -5 VARANDA LIGHTS	0	18	0	0
GH -6 VARANDA LIGHTS	0	18	0	0
GH -7 VARANDA LIGHTS	0	18	0	0
GH -8 VARANDA LIGHTS	0	18	0	0
GH -4 (Stair Case Lights)	0	18	0	0
GH -5 (Stair Case Lights)	0	18	0	0
GH -6 (Stair Case Lights)	0	18	0	0
GH -7 (Stair Case Lights)	0	18	0	0
GH -8(Stair Case Lights)	0	18	0	0
GH -1(Toilet Lights)	0	18	0	0
GH -2(Toilet Lights)	0	18	0	0
GH -3(Toilet Lights)	0	18	0	0
GH -4 (Toilet Lights)	0	18	0	0

BLOCK NAME	1*18 W 2 FEET TUBE FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -5 (Toilet Lights)	0	18	0	0
GH -6 (Toilet Lights)	0	18	0	0
GH -7 (Toilet Lights)	0	18	0	0
GH -8 (Toilet Lights)	0	18	0	0
GH -1 (Common Room Lights)	0	18	0	0
GH -2 (Common Room Lights)	0	18	0	0
GH -3 (Common Room Lights)	0	18	0	0
GH -4 (Common Room Lights)	0	18	0	0
GH -5 (Common Room Lights)	0	18	0	0
GH -6 (Common Room Lights)	0	18	0	0
GH -7 (Common Room Lights)	0	18	0	0
GH -8 (Common Room Lights)	0	18	0	0
LH -1(DOUBLE ROOM)	0	18	0	0
LH-2(DOUBLE ROOM)	0	18	0	0
LH-3(TRIPLE ROOM)	0	18	0	0
LH-4(DOUBLE ROOM)	0	18	0	0
LH-5-A(SINGLE ROOM)	0	18	0	0
LH-5-B(SINGLE ROOM)	0	18	0	0
LH-6(TRIPLE ROOM)	0	18	0	0
LH -1(VARANDA LIGHTS)	0	18	0	0
LH -2(VARANDA LIGHTS)	0	18	0	0
LH -3 (VARANDA LIGHTS)	0	18	0	0
LH -4(VARANDA LIGHTS)	0	18	0	0
LH -5-A-(VARANDA LIGHTS)	0	18	0	0
LH -5-B-(VARANDA LIGHTS)	0	18	0	0
LH -6 (VARANDA LIGHTS)	0	18	0	0
LH -1 (Stair Case Lights)	0	18	0	0
LH -2 (Stair Case Lights)	0	18	0	0
LH -3 (Stair Case Lights)	0	18	0	0
LH -4 (Stair Case Lights)	0	18	0	0
LH -5-A (Stair Case Lights)	0	18	0	0
LH -5-B (Stair Case Lights)	0	18	0	0
LH -6 (Stair Case Lights)	0	18	0	0
LH -1 (Toilet Lights)	0	18	0	0
LH -2 (Toilet Lights)	0	18	0	0
LH -3 (Toilet Lights)	0	18	0	0
LH -4 (Toilet Lights)	0	18	0	0
LH -5-A (Toilet Lights)	0	18	0	0

BLOCK NAME	1*18 W 2 FEET TUBE FITTING			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -5-B(Toilet Lights)	0	18	0	0
LH -6 (Toilet Lights)	0	18	0	0
LH -1 (Common Room Lights)	0	18	0	0
LH -2 (Common Room Lights)	0	18	0	0
LH -3 (Common Room Lights)	0	18	0	0
LH -4 (Common Room Lights)	0	18	0	0
LH -5-A (Common Room Lights)	0	18	0	0
LH -5-B (Common Room Lights)	0	18	0	0
LH -6 (Common Room Lights)	0	18	0	0
TOTAL FITTINGS	**12**			**864**

BLOCK NAME	T-5 FITTING -14 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	14	0	0
INFORMATION TECHNOLOGY BLOCK	0	14	0	0
ECE OLD BLOCK	0	14	0	0
ECE ANNEX BLOCK	0	14	0	0
MECHANICAL ENGINEERING BLOCK	0	14	0	0
SOM BLOCK	0	14	0	0
SACE BLOCK	0	14	0	0
WORK SHOP BLOCK	0	14	0	0
CORE LAB BLOCK	0	14	0	0
EEE EAST WING	0	14	0	0
EEE WEST WING	0	14	0	0
CHEMICAL ENGINEERING BLOCK	0	14	0	0
BIOMEDICAL ENGINEERING BLOCK	0	14	0	0
HUMANITIES BLOCK	0	14	0	0
ADMIN BLOCK	0	14	0	0
LIBRARY AND COMPUTER CENTRE	0	14	0	0
CARRIER DEVOLOPMENT CENTRE	0	14	0	0
MAIN CANTEEN	0	14	0	0
SUBSTATION -1	0	14	0	0
SUBSTATION -2	0	14	0	0

BLOCK NAME	T-5 FITTING -14 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
INNOVATION AND INGUBATION CENTRE	0	14	0	0
OLD SPORTS CENTRE	0	14	0	0
CSE ANNEX	0	14	0	0
GH -1(DOUBLE ROOM)	0	14	0	0
GH-2(DOUBLE ROOM)	0	14	0	0
GH-3(SINGLE ROOM)	0	14	0	0
GH-4(TRIPLE ROOM)	0	14	0	0
GH-5(TRIPLE ROOM)	0	14	0	0
GH-6(SINGLE ROOM)	0	14	0	0
GH-7(SINGLE ROOM)	0	14	0	0
GH-8(SINGLE ROOM)	0	14	0	0
GH -1VARANDA LIGHTS	0	14	0	0
GH -2 VARANDA LIGHTS	0	14	0	0
GH -3 VARANDA LIGHTS	0	14	0	0
GH -4 VARANDA LIGHTS	0	14	0	0
GH -5 VARANDA LIGHTS	0	14	0	0
GH -6 VARANDA LIGHTS	0	14	0	0
GH -7 VARANDA LIGHTS	0	14	0	0
GH -8 VARANDA LIGHTS	0	14	0	0
GH -4 (Stair Case Lights)	0	14	0	0
GH -5 (Stair Case Lights)	0	14	0	0
GH -6 (Stair Case Lights)	0	14	0	0
GH -7 (Stair Case Lights)	0	14	0	0
GH -8(Stair Case Lights)	0	14	0	0
GH -1(Toilet Lights)	0	14	0	0
GH -2(Toilet Lights)	0	14	0	0
GH -3(Toilet Lights)	0	14	0	0
GH -4 (Toilet Lights)	0	14	0	0
GH -5 (Toilet Lights)	0	14	0	0
GH -6 (Toilet Lights)	0	14	0	0
GH -7 (Toilet Lights)	0	14	0	0
GH -8 (Toilet Lights)	0	14	0	0
GH -1 (Common Room Lights)	0	14	0	0
GH -2 (Common Room Lights)	0	14	0	0
GH -3 (Common Room Lights)	0	14	0	0
GH -4 (Common Room Lights)	0	14	0	0
GH -5 (Common Room Lights)	0	14	0	0
GH -6 (Common Room Lights)	0	14	0	0

BLOCK NAME	T-5 FITTING -14 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -7 (Common Room Lights)	0	14	0	0
GH -8 (Common Room Lights)	0	14	0	0
LH -1(DOUBLE ROOM)	0	14	0	0
LH-2(DOUBLE ROOM)	0	14	0	0
LH-3(TRIPLE ROOM)	0	14	0	0
LH-4(DOUBLE ROOM)	0	14	0	0
LH-5-A (SINGLE ROOM)	72	14	6	6048
LH-5-B(SINGLE ROOM)	127	14	6	10668
LH-6(TRIPLE ROOM)	0	14	0	0
LH -1(VARANDA LIGHTS)	0	14	0	0
LH -2(VARANDA LIGHTS)	0	14	0	0
LH -3 (VARANDA LIGHTS)	0	14	0	0
LH -4(VARANDA LIGHTS)	0	14	0	0
LH -5-A-(VARANDA LIGHTS)	0	14	0	0
LH -5-B-(VARANDA LIGHTS)	0	14	0	0
LH -6 (VARANDA LIGHTS)	0	14	0	0
LH -1 (Stair Case Lights)	0	14	0	0
LH -2 (Stair Case Lights)	0	14	0	0
LH -3 (Stair Case Lights)	0	14	0	0
LH -4 (Stair Case Lights)	0	14	0	0
LH -5-A (Stair Case Lights)	0	14	0	0
LH -5-B (Stair Case Lights)	0	14	0	0
LH -6 (Stair Case Lights)	0	14	0	0
LH -1 (Toilet Lights)	0	14	0	0
LH -2 (Toilet Lights)	0	14	0	0
LH -3 (Toilet Lights)	0	14	0	0
LH -4 (Toilet Lights)	0	14	0	0
LH -5-A (Toilet Lights)	0	14	0	0
LH -5-B(Toilet Lights)	0	14	0	0
LH -6 (Toilet Lights)	0	14	0	0
LH -1 (Common Room Lights)	0	14	0	0
LH -2 (Common Room Lights)	0	14	0	0
LH -3 (Common Room Lights)	0	14	0	0
LH -4 (Common Room Lights)	0	14	0	0
LH -5-A (Common Room Lights)	0	14	0	0
LH -5-B (Common Room Lights)	0	14	0	0
LH -6 (Common Room Lights)	0	14	0	0
TOTAL FITTINGS	**199**			**16716**

BLOCK NAME	T-5 FITTING -10 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	10	0	0
INFORMATION TECHNOLOGY BLOCK	0	10	0	0
ECE OLD BLOCK	0	10	0	0
ECE ANNEX BLOCK	0	10	0	0
MECHANICAL ENGINEERING BLOCK	0	10	0	0
SOM BLOCK	0	10	0	0
SACE BLOCK	0	10	0	0
WORK SHOP BLOCK	0	10	0	0
CORE LAB BLOCK	0	10	0	0
EEE EAST WING	0	10	0	0
EEE WEST WING	0	10	0	0
CHEMICAL ENGINEERING BLOCK	0	10	0	0
BIOMEDICAL ENGINEERING BLOCK	0	10	0	0
HUMANITIES BLOCK	0	10	0	0
ADMIN BLOCK	0	10	0	0
LIBRARY AND COMPUTER CENTRE	0	10	0	0
CARRIER DEVOLOPMENT CENTRE	0	10	0	0
MAIN CANTEEN	0	10	0	0
SUBSTATION -1	0	10	0	0
SUBSTATION -2	0	10	0	0
INNOVATION AND INGUBATION CENTRE	0	10	0	0
OLD SPORTS CENTRE	0	10	0	0
CSE ANNEX	0	10	0	0
GH -1(DOUBLE ROOM)	0	10	0	0
GH-2(DOUBLE ROOM)	0	10	0	0
GH-3(SINGLE ROOM)	0	10	0	0
GH-4(TRIPLE ROOM)	0	10	0	0
GH-5(TRIPLE ROOM)	0	10	0	0
GH-6(SINGLE ROOM)	0	10	0	0
GH-7(SINGLE ROOM)	0	10	0	0
GH-8(SINGLE ROOM)	0	10	0	0
GH -1VARANDA LIGHTS	0	10	0	0
GH -2 VARANDA LIGHTS	0	10	0	0
GH -3 VARANDA LIGHTS	0	10	0	0
GH -4 VARANDA LIGHTS	0	10	0	0
GH -5 VARANDA LIGHTS	0	10	0	0
GH -6 VARANDA LIGHTS	0	10	0	0

BLOCK NAME	T-5 FITTING -10 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -7 VARANDA LIGHTS	0	10	0	0
GH -8 VARANDA LIGHTS	0	10	0	0
GH -4 (Stair Case Lights)	0	10	0	0
GH -5 (Stair Case Lights)	0	10	0	0
GH -6 (Stair Case Lights)	0	10	0	0
GH -7 (Stair Case Lights)	0	10	0	0
GH -8(Stair Case Lights)	0	10	0	0
GH -1(Toilet Lights)	0	10	0	0
GH -2(Toilet Lights)	0	10	0	0
GH -3(Toilet Lights)	0	10	0	0
GH -4 (Toilet Lights)	0	10	0	0
GH -5 (Toilet Lights)	0	10	0	0
GH -6 (Toilet Lights)	0	10	0	0
GH -7 (Toilet Lights)	0	10	0	0
GH -8 (Toilet Lights)	0	10	0	0
GH -1 (Common Room Lights)	0	10	0	0
GH -2 (Common Room Lights)	0	10	0	0
GH -3 (Common Room Lights)	0	10	0	0
GH -4 (Common Room Lights)	0	10	0	0
GH -5 (Common Room Lights)	0	10	0	0
GH -6 (Common Room Lights)	0	10	0	0
GH -7 (Common Room Lights)	0	10	0	0
GH -8 (Common Room Lights)	0	10	0	0
LH -1(DOUBLE ROOM)	0	10	0	0
LH-2(DOUBLE ROOM)	0	10	0	0
LH-3(TRIPLE ROOM)	0	10	0	0
LH-4(DOUBLE ROOM)	0	10	0	0
LH-5-A(SINGLE ROOM)	0	10	0	0
LH-5-B(SINGLE ROOM)	0	10	0	0
LH-6(TRIPLE ROOM)	127	10	6	7620
LH -1(VARANDA LIGHTS)	0	10	0	0
LH -2(VARANDA LIGHTS)	0	10	0	0
LH -3 (VARANDA LIGHTS)	0	10	0	0
LH -4(VARANDA LIGHTS)	0	10	0	0
LH -5-A-(VARANDA LIGHTS)	0	10	0	0
LH -5-B-(VARANDA LIGHTS)	0	10	0	0
LH -6 (VARANDA LIGHTS)	0	10	0	0
LH -1 (Stair Case Lights)	0	10	0	0
LH -2 (Stair Case Lights)	0	10	0	0

BLOCK NAME	T-5 FITTING -10 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -3 (Stair Case Lights)	0	10	0	0
LH -4 (Stair Case Lights)	0	10	0	0
LH -5-A (Stair Case Lights)	0	10	0	0
LH -5-B (Stair Case Lights)	0	10	0	0
LH -6 (Stair Case Lights)	0	10	0	0
LH -1 (Toilet Lights)	0	10	0	0
LH -2 (Toilet Lights)	0	10	0	0
LH -3 (Toilet Lights)	0	10	0	0
LH -4 (Toilet Lights)	0	10	0	0
LH -5-A (Toilet Lights)	0	10	0	0
LH -5-B(Toilet Lights)	0	10	0	0
LH -6 (Toilet Lights)	0	10	0	0
LH -1 (Common Room Lights)	0	10	0	0
LH -2 (Common Room Lights)	0	10	0	0
LH -3 (Common Room Lights)	0	10	0	0
LH -4 (Common Room Lights)	0	10	0	0
LH -5-A (Common Room Lights)	0	10	0	0
LH -5-B (Common Room Lights)	0	10	0	0
LH -6 (Common Room Lights)	0	10	0	0
TOTAL FITTINGS	**127**			**7620**

BLOCK NAME	T 5 FITTING -28 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
COMPUTER SCIENCE ENGINEERING BLOCK	0	28	0	0
INFORMATION TECHNOLOGY BLOCK	0	28	0	0
ECE OLD BLOCK	0	28	0	0
ECE ANNEX BLOCK	0	28	0	0
MECHANICAL ENGINEERING BLOCK	0	28	0	0
SOM BLOCK	0	28	0	0
SACE BLOCK	0	28	0	0
WORK SHOP BLOCK	0	28	0	0
CORE LAB BLOCK	0	28	0	0
EEE EAST WING	0	28	0	0
EEE WEST WING	0	28	0	0
CHEMICAL ENGINEERING BLOCK	0	28	0	0

BLOCK NAME	T 5 FITTING -28 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
BIOMEDICAL ENGINEERING BLOCK	0	28	0	0
HUMANITIES BLOCK	0	28	0	0
ADMIN BLOCK	0	28	0	0
LIBRARY AND COMPUTER CENTRE	0	28	0	0
CARRIER DEVOLOPMENT CENTRE	0	28	0	0
MAIN CANTEEN	0	28	0	0
SUBSTATION -1	0	28	0	0
SUBSTATION -2	0	28	0	0
INNOVATION AND INGUBATION CENTRE	0	28	0	0
OLD SPORTS CENTRE	0	28	0	0
CSE ANNEX	0	28	0	0
GH -1(DOUBLE ROOM)	0	28	0	0
GH-2(DOUBLE ROOM)	0	28	0	0
GH-3(SINGLE ROOM)	0	28	0	0
GH-4(TRIPLE ROOM)	0	28	0	0
GH-5(TRIPLE ROOM)	0	28	0	0
GH-6(SINGLE ROOM)	0	28	0	0
GH-7(SINGLE ROOM)	0	28	0	0
GH-8(SINGLE ROOM)	0	28	0	0
GH -1VARANDA LIGHTS	0	28	0	0
GH -2 VARANDA LIGHTS	0	28	0	0
GH -3 VARANDA LIGHTS	0	28	0	0
GH -4 VARANDA LIGHTS	0	28	0	0
GH -5 VARANDA LIGHTS	0	28	0	0
GH -6 VARANDA LIGHTS	0	28	0	0
GH -7 VARANDA LIGHTS	0	28	0	0
GH -8 VARANDA LIGHTS	0	28	0	0
GH -4 (Stair Case Lights)	0	28	0	0
GH -5 (Stair Case Lights)	0	28	0	0
GH -6 (Stair Case Lights)	0	28	0	0
GH -7 (Stair Case Lights)	0	28	0	0
GH -8(Stair Case Lights)	0	28	0	0
GH -1(Toilet Lights)	0	28	0	0
GH -2(Toilet Lights)	0	28	0	0
GH -3(Toilet Lights)	0	28	0	0
GH -4 (Toilet Lights)	0	28	0	0
GH -5 (Toilet Lights)	0	28	0	0
GH -6 (Toilet Lights)	0	28	0	0

BLOCK NAME	T 5 FITTING -28 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
GH -7 (Toilet Lights)	0	28	0	0
GH -8 (Toilet Lights)	0	28	0	0
GH -1 (Common Room Lights)	0	28	0	0
GH -2 (Common Room Lights)	0	28	0	0
GH -3 (Common Room Lights)	0	28	0	0
GH -4 (Common Room Lights)	0	28	0	0
GH -5 (Common Room Lights)	0	28	0	0
GH -6 (Common Room Lights)	0	28	0	0
GH -7 (Common Room Lights)	0	28	0	0
GH -8 (Common Room Lights)	0	28	0	0
LH -1(DOUBLE ROOM)	0	28	0	0
LH-2(DOUBLE ROOM)	0	28	0	0
LH-3(TRIPLE ROOM)	0	28	0	0
LH-4(DOUBLE ROOM)	0	28	0	0
LH-5-A(SINGLE ROOM)	72	28	6	12096
LH-5-B(SINGLE ROOM)	127	28	6	21336
LH-6(TRIPLE ROOM)	254	28	6	42672
LH -1(VARANDA LIGHTS)	0	28	0	0
LH -2(VARANDA LIGHTS)	0	28	0	0
LH -3 (VARANDA LIGHTS)	0	28	0	0
LH -4(VARANDA LIGHTS)	0	28	0	0
LH -5-A-(VARANDA LIGHTS)	84	28	6	14112
LH -5-B-(VARANDA LIGHTS)	240	28	6	40320
LH -6 (VARANDA LIGHTS)	240	28	6	40320
LH -1 (Stair Case Lights)	0	28	0	0
LH -2 (Stair Case Lights)	0	28	0	0
LH -3 (Stair Case Lights)	0	28	0	0
LH -4 (Stair Case Lights)	0	28	0	0
LH -5-A (Stair Case Lights)	6	28	6	1008
LH -5-B (Stair Case Lights)	24	28	6	4032
LH -6 (Stair Case Lights)	24	28	6	4032
LH -1 (Toilet Lights)	0	28	0	0
LH -2 (Toilet Lights)	0	28	0	0
LH -3 (Toilet Lights)	0	28	0	0
LH -4 (Toilet Lights)	0	28	0	0
LH -5-A (Toilet Lights)	0	28	0	0
LH -5-B(Toilet Lights)	0	28	0	0
LH -6 (Toilet Lights)	40	28	4	4480
LH -1 (Common Room Lights)	0	28	0	0

BLOCK NAME	T 5 FITTING -28 W			
	No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
LH -2 (Common Room Lights)	0	28	0	0
LH -3 (Common Room Lights)	0	28	0	0
LH -4 (Common Room Lights)	0	28	0	0
LH -5-A (Common Room Lights)	8	28	4	896
LH -5-B (Common Room Lights)	8	28	4	896
LH -6 (Common Room Lights)	8	28	4	896
TOTAL FITTINGS	**1135**			**187096**

Table 4: Summary Sheet of Electrical System (assuming on an average 4hrs usage)

Types of Light	Total No of Fittings	Power rating	(WH)
TUBE LIGHT -2*36 WATTS	2283	72	659520
TUBE LIGHT 1*36 watts	3839	36	716904
LED TUBE -1*18 W FITTING	1100	18	88344
LED 22 Watts	521	22	67364
LED 11 Watts	250	11	11000
2*11 W.CFL FITTING	871	22	93676
2*2 feet LED FITTING	422	40	67520
1*1 feet LED FITTING	123	10	4920
2*18 W CFL FITTING	32	36	4608
10 WATTS STEP LIGHTS	8	10	320
2*2 FEET MICRO TUBE FITTING	49	64	12544
10 W LED ROUND FITTING	4	10	160
CFL 18 W FALCEILING FITTING	40	18	2880
250 W FLOOD LIGHTS	10	250	10000
250 W.MID WAY FLOOD LIGHT	10	250	2500
6 INCHES SQUARE LED FITTING	7	6	168
6 INCHES ROUND LED FITTING	154	6	3696
2*18 W LED TUBE FITTING	89	36	12816
1*18 W 2 FEET TUBE FITTING	12	18	864
T-5 FITTING -14 W	199	14	16716
T-5 FITTING -10 W	127	10	7620
T 5 FITTING -28 W	1135	28	187096
Total No of Lighting Fittings	**11285**		**1971236**

LIGHTNING SYSTEM OF SSN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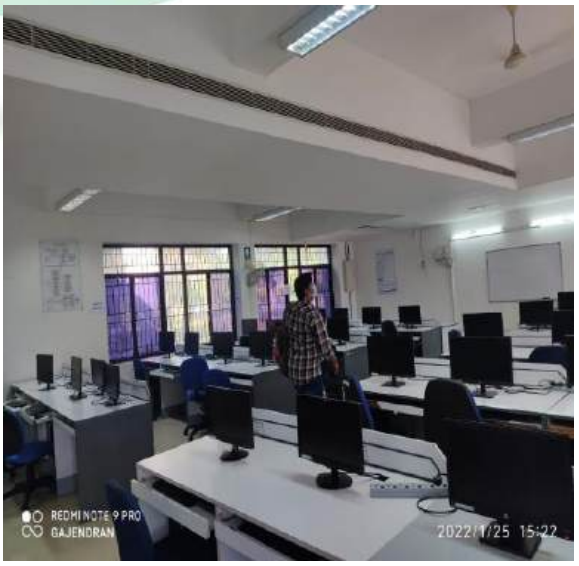
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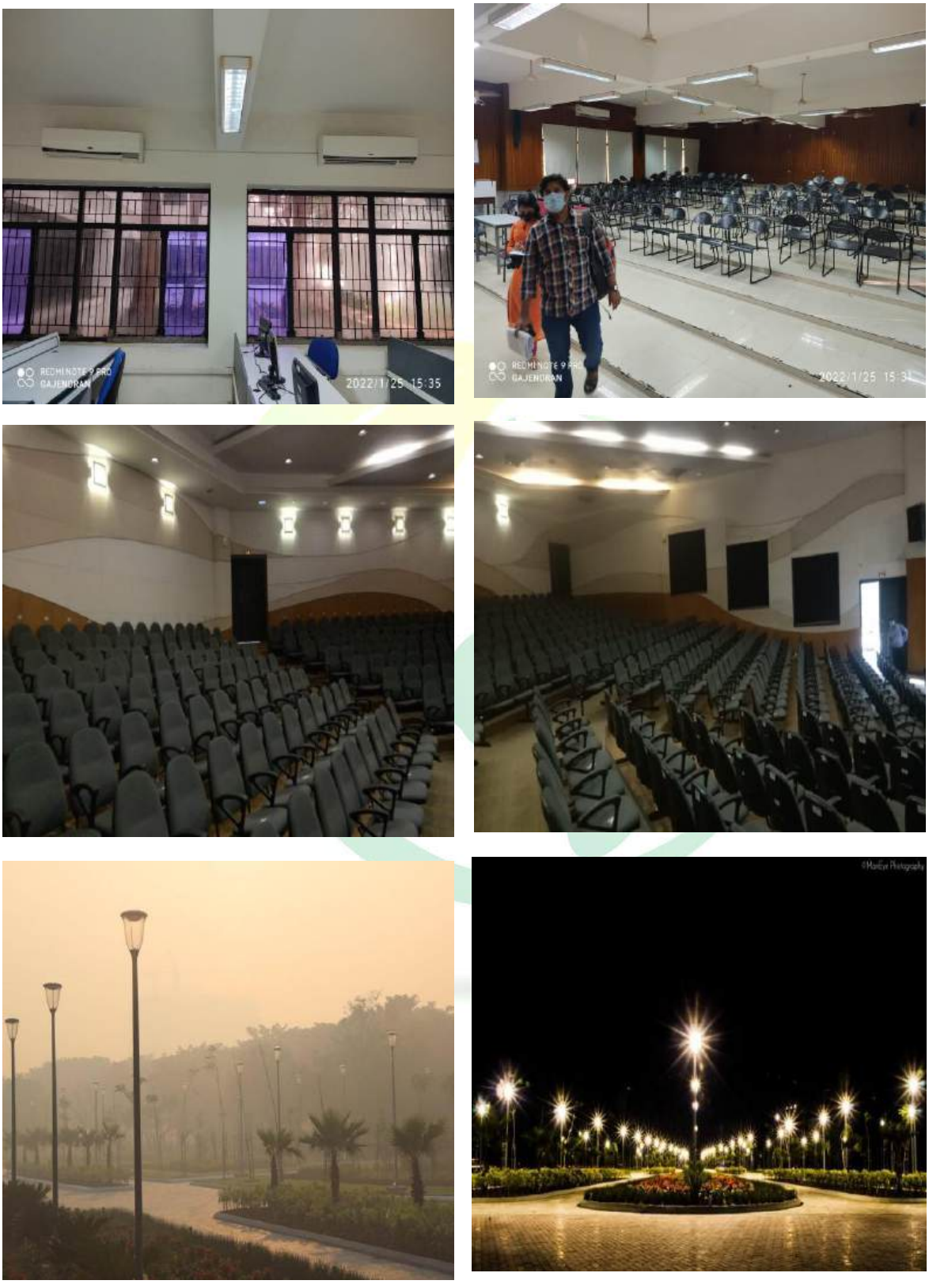

Figure 7: Lighting Fixtures in campus

4.1.1. Observation and Comments

The Institute has about 6122 tube lights, 2670 LED lights,943 CFL lights, 1461 T-5 fittings,20 flood lights in different locations- academic blocs, administrative blocs, departments, labs, common area, library, canteen, sports complex, toilets etc. Ladies and gents hostel together has nearly 5567 light of which majority lights are the T-5 28 W fittings.

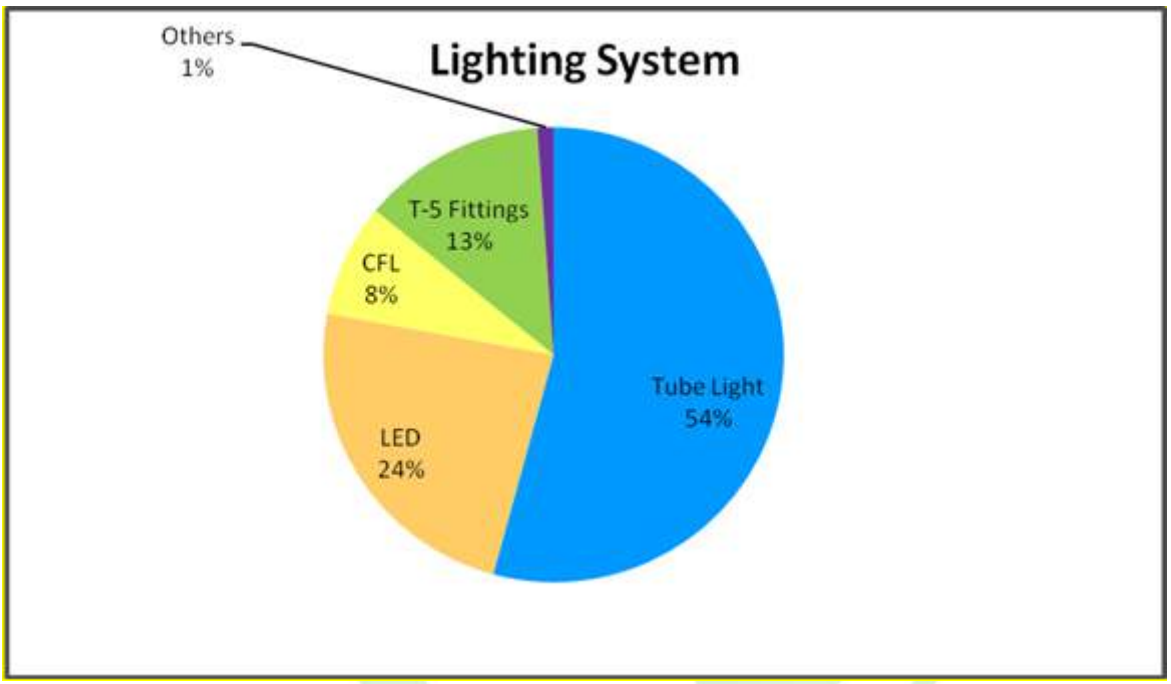

Figure 8: Pie Chart Showing Different Lighting System used in the Institution

The pie chart has been plotted based on the audit findings and it can be concluded that most of lighting luminaries used in the Institution were conventional like tube light, CFL, which were consuming very high electricity as compare with LED lighting luminaries. Nearly 54% of lighting system is constituted by the tube light of 2*36 Watt and 1*36-watt tube light. Eight per cent of the lighting system is met by the CFL and thirteen percent of the lighting system is met using T-5 fittings. The total lighting load from the lighting system alone is 39,424 kWh per month. If the institution replaces the conventional lighting system with LED system, drastic reduction in power consumption can be achieved.

LED Tube lights are available in the market: 18 Watt, 20 Watts, 22 Watts, etc. In terms of light output (or lumens output), a 20-Watt LED Tube light is similar to an old 40-Watt T-8 or 27-Watt T-5 tube light.

Table 5: Comparison of LED, CFL, Tube light Brightness and Watts

System	LEDs	CFLs	FlourescentT-8
Watts/Hour	10 Watts/hr	15Watts/hr	36 Watts/hr
Lumen/watt/hr	80.60	48	73.61
Life Span	50,000	10,000	15,000

Light Output	LEDs	CFLs	Incandescent
Lumen	**Watts**	**Watts**	**Watts**
450-600	4-5	8-12	40
750-900	6-8	13-18	60
1100-1300	9-13	18-22	75
1600-1800	16-20	23-30	100

This table clearly shows that a 100 W Incandescent bulb gives 1600-1800 lumens, 23 W CFL gives 1600-1800 lumens, 16-20 W LED gives 1600-1800 lumens.

The above, clearly shows that using LED lamp is the best option while selecting the lighting system for an educational institution like SSN College.

Even the life span of LED is much higher than CFL & Tube lights. LED are expensive than CFL and tube lights, but LEDs come with a life span of 10-15 years (depending on the number of hours of usage per day); consume up to 50% less power than CFLs and 80% lesser than incandescent.

Thus, the savings in the electricity bills and operational costs result in a quick payback of the comparatively higher product price.

The detailed calculation for energy saving that could be achieved by replacing conventional light fixture with LED has been tabulated in the energy saving chapter.

During the audit it was observed that at many locations, the light fixture was not working properly, so we would like to suggest that all the lighting fixtures to be fixed and periodic maintenance to be done, so that all the fixtures are working properly and lux level maintained.

It was also noted that all the cleaning of the fixtures was not carried out on a regular basis. So, we would like to suggest that a periodic cleaning and maintenance of lighting fixtures to be carried out at least once in every 5-6 months to increase performance of Lighting and also improve their Lux level.

4.2. FAN SYSTEM

There are various types of conventional ceiling fan, wall fan and exhaust fan installed at various location in the SSN College and details of the same is tabulated below.

Table 6: The detail of Different type of Ceiling, Wall and Exhaust Fan System

SI. NO	BLOCK NAME	CEILING FAN			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
1	COMPUTER SCIENCE ENGINEERING BLOCK	141	70	8	78960
2	INFORMATION TECHNOLOGY BLOCK	142	70	8	79520
3	ECE OLD BLOCK	216	70	8	120960
4	ECE ANNEX BLOCK	79	70	8	44240
5	MECHANICAL ENGINEERING BLOCK	88	70	8	49280
6	SOM BLOCK	111	70	8	62160
7	SACE BLOCK	7	70	8	3920
8	WORK SHOP BLOCK	85	70	8	47600
9	CORE LAB BLOCK	68	70	8	38080
10	EEE EAST WING	132	70	8	73920
11	EEE WEST WING	177	70	8	99120
12	CHEMICAL ENGINEERING BLOCK	132	70	8	73920
13	BIOMEDICAL ENGINEERING BLOCK	154	70	8	86240
14	HUMANITIES BLOCK	174	70	8	97440
15	ADMIN BLOCK	26	70	8	14560
16	LIBRARY AND COMPUTER CENTRE	71	70	8	39760
17	CARRIER DEVOLOPMENT CENTRE	30	70	8	16800
18	MAIN CANTEEN	105	70	4	29400
19	SUBSTATION -1	8	70	8	4480
20	SUBSTATION -2	3	70	8	1680
21	INNOVATION AND INGUBATION CENTRE	6	70	8	3360
22	OLD SPORTS CENTRE	21	70	4	5880
23	CSE ANNEX	154	70	8	86240
24	GH -1(DOUBLE ROOM)	112	70	10	78400
25	GH -2 (DOUBLE ROOM)	96	70	10	67200
26	GH -3 (DOUBLE ROOM)	75	70	10	52500
27	GH -4 (DOUBLE ROOM)	192	70	10	134400
28	GH -5 (DOUBLE ROOM)	368	70	10	257600
29	GH -6 (DOUBLE ROOM)	252	70	10	176400
30	GH -7 (DOUBLE ROOM)	136	70	10	95200
31	GH -8 (DOUBLE ROOM)	185	70	10	129500

SI. NO	BLOCK NAME	CEILING FAN			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
32	GH -1(COMMON ROOM)	6	70	4	1680
33	GH -2 (COMMON ROOM)	12	70	4	3360
34	GH -3 (COMMON ROOM)	8	70	4	2240
35	GH -4 (COMMON ROOM)	12	70	4	3360
36	GH -5 (COMMON ROOM)	32	70	4	8960
37	GH -6 (COMMON ROOM)	16	70	4	4480
38	GH -7 (COMMON ROOM)	0	70	4	0
39	GH -8 (COMMON ROOM)	8	70	4	2240
40	LH -1(DOUBLE ROOM)	80	70	10	56000
41	LH-2(DOUBLE ROOM)	48	70	10	33600
42	LH-3(TRIPLE ROOM)	94	70	10	65800
43	LH-4(DOUBLE ROOM)	194	70	10	135800
44	LH-5-A (SINGLE ROOM)	72	70	10	50400
45	LH-5-B(SINGLE ROOM)	127	70	10	88900
46	LH-6(TRIPLE ROOM)	127	70	10	88900
47	LH -1(COMMON ROOM)	6	70	4	1680
48	LH-2(COMMON ROOM)	12	70	4	3360
49	LH-3(COMMON ROOM)	8	70	4	2240
50	LH-4(COMMON ROOM)	14	70	4	3920
51	LH-5-A (COMMON ROOM)	16	70	4	4480
52	LH-5-B (COMMON ROOM)	8	70	4	2240
53	LH-6(COMMON ROOM)	8	70	4	2240

SI. NO	BLOCK NAME	EXAUST FAN			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
1	COMPUTER SCIENCE ENGINEERING BLOCK	2	60	4	480
2	INFORMATION TECHNOLOGY BLOCK	2	60	4	120
3	ECE OLD BLOCK	2	60	4	120
4	ECE ANNEX BLOCK	9	60	4	540
5	MECHANICAL ENGINEERING BLOCK	2	60	4	120
6	SOM BLOCK	5	60	4	300
7	SACE BLOCK	0	60	0	0
8	WORK SHOP BLOCK	2	60	4	120
9	CORE LAB BLOCK	1	60	4	60
10	EEE EAST WING	4	60	4	240

SI. NO	BLOCK NAME	EXAUST FAN			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
11	EEE WEST WING	1	60	4	60
12	CHEMICAL ENGINEERING BLOCK	7	60	4	420
13	BIOMEDICAL ENGINEERING BLOCK	0	60	0	0
14	HUMANITIES BLOCK	2	60	4	120
15	ADMIN BLOCK	3	60	4	180
16	LIBRARY AND COMPUTER CENTRE	2	60	4	120
17	CARRIER DEVOLOPMENT CENTRE	4	60	4	240
18	MAIN CANTEEN	8	60	8	480
19	SUBSTATION -1	0	60	0	0
20	SUBSTATION -2	0	60	0	0
21	INNOVATION AND INGUBATION CENTRE	2	60	4	120
22	OLD SPORTS CENTRE	1	60	4	60
23	CSE ANNEX	5	60	4	300
24	GH -1(DOUBLE ROOM)	0	60	0	0
25	GH -2 (DOUBLE ROOM)	0	60	0	0
26	GH -3 (DOUBLE ROOM)	0	60	0	0
27	GH -4 (DOUBLE ROOM)	0	60	0	0
28	GH -5 (DOUBLE ROOM)	0	60	0	0
29	GH -6 (DOUBLE ROOM)	0	60	0	0
30	GH -7 (DOUBLE ROOM)	0	60	0	0
31	GH -8 (DOUBLE ROOM)	0	60	0	0
32	GH -1(COMMON ROOM)	0	60	0	0
33	GH -2 (COMMON ROOM)	0	60	0	0
34	GH -3 (COMMON ROOM)	0	60	0	0
35	GH -4 (COMMON ROOM)	0	60	0	0
36	GH -5 (COMMON ROOM)	0	60	0	0
37	GH -6 (COMMON ROOM)	0	60	0	0
38	GH -7 (COMMON ROOM)	0	60	0	0
39	GH -8 (COMMON ROOM)	0	60	0	0
40	LH -1(DOUBLE ROOM)	0	60	0	0
41	LH-2(DOUBLE ROOM)	0	60	0	0
42	LH-3(TRIPLE ROOM)	0	60	0	0
43	LH-4(DOUBLE ROOM)	0	60	0	0
44	LH-5-A(SINGLE ROOM)	0	60	0	0
45	LH-5-B(SINGLE ROOM)	0	60	0	0
46	LH-6(TRIPLE ROOM)	0	60	0	0
47	LH -1(COMMON ROOM)	0	60	0	0

SI. NO	BLOCK NAME	EXAUST FAN			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
48	LH-2(COMMON ROOM)	0	60	0	0
49	LH-3(COMMON ROOM)	0	60	0	0
50	LH-4(COMMON ROOM)	0	60	0	0
51	LH-5-A(COMMON ROOM)	0	60	0	0
52	LH-5-B(COMMON ROOM)	0	60	0	0
53	LH-6(COMMON ROOM)	0	60	0	0

SI. NO	BLOCK NAME	WALL MOUNTING FAN			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
1	COMPUTER SCIENCE ENGINEERING BLOCK	73	30	8	17520
2	INFORMATION TECHNOLOGY BLOCK	43	30	8	1290
3	ECE OLD BLOCK	29	30	8	870
4	ECE ANNEX BLOCK	17	30	8	510
5	MECHANICAL ENGINEERING BLOCK	16	30	8	480
6	SOM BLOCK	12	30	8	360
7	SACE BLOCK	0	30	0	0
8	WORK SHOP BLOCK	5	30	8	150
9	CORE LAB BLOCK	7	30	4	210
10	EEE EAST WING	0	30	0	0
11	EEE WEST WING	8	30	8	240
12	CHEMICAL ENGINEERING BLOCK	1	30	8	30
13	BIOMEDICAL ENGINEERING BLOCK	10	30	8	300
14	HUMANITIES BLOCK	0	30	0	0
15	ADMIN BLOCK	0	30	0	0
16	LIBRARY AND COMPUTER CENTRE	52	30	4	1560
17	CARRIER DEVOLOPMENT CENTRE	0	30	0	0
18	MAIN CANTEEN	1	30	4	30
19	SUBSTATION -1	1	30	8	30
20	SUBSTATION -2	0	30	0	0
21	INNOVATION AND INGUBATION CENTRE	0	30	0	0
22	OLD SPORTS CENTRE	1	30	4	30
23	CSE ANNEX	0	30	0	0
24	GH -1(DOUBLE ROOM)	0	30	0	0
25	GH -2 (DOUBLE ROOM)	0	30	0	0

SI. NO	BLOCK NAME	WALL MOUNTING FAN			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
26	GH -3 (DOUBLE ROOM)	0	30	0	0
27	GH -4 (DOUBLE ROOM)	0	30	0	0
28	GH -5 (DOUBLE ROOM)	0	30	0	0
29	GH -6 (DOUBLE ROOM)	0	30	0	0
30	GH -7 (DOUBLE ROOM)	0	30	0	0
31	GH -8 (DOUBLE ROOM)	0	30	0	0
32	GH -1(COMMON ROOM)	0	30	0	0
33	GH -2 (COMMON ROOM)	0	30	0	0
34	GH -3 (COMMON ROOM)	0	30	0	0
35	GH -4 (COMMON ROOM)	0	30	0	0
36	GH -5 (COMMON ROOM)	0	30	0	0
37	GH -6 (COMMON ROOM)	0	30	0	0
38	GH -7 (COMMON ROOM)	0	30	0	0
39	GH -8 (COMMON ROOM)	0	30	0	0
40	LH -1(DOUBLE ROOM)	0	30	0	0
41	LH-2(DOUBLE ROOM)	0	30	0	0
42	LH-3(TRIPLE ROOM)	0	30	0	0
43	LH-4(DOUBLE ROOM)	0	30	0	0
44	LH-5-A (SINGLE ROOM)	0	30	0	0
45	LH-5-B (SINGLE ROOM)	0	30	0	0
46	LH-6(TRIPLE ROOM)	0	30	0	0
47	LH -1(COMMON ROOM)	0	30	0	0
48	LH-2(COMMON ROOM)	0	30	0	0
49	LH-3(COMMON ROOM)	0	30	0	0
50	LH-4(COMMON ROOM)	0	30	0	0
51	LH-5-A (COMMON ROOM)	0	30	0	0
52	LH-5-B (COMMON ROOM)	0	30	0	0
53	LH-6(COMMON ROOM)	0	30	0	0

SI. NO	BLOCK NAME	PEDASTAL FAN			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
1	COMPUTER SCIENCE ENGINEERING BLOCK	0	70	0	0
2	INFORMATION TECHNOLOGY BLOCK	0	70	0	0
3	ECE OLD BLOCK	0	70	0	0
4	ECE ANNEX BLOCK	0	70	0	0
5	MECHANICAL ENGINEERING BLOCK	0	70	0	0
6	SOM BLOCK	0	70	0	0
7	SACE BLOCK	0	70	0	0
8	WORK SHOP BLOCK	0	70	0	0
9	CORE LAB BLOCK	0	70	0	0
10	EEE EAST WING	0	70	0	0
11	EEE WEST WING	0	70	0	0
12	CHEMICAL ENGINEERING BLOCK	0	70	0	0
13	BIOMEDICAL ENGINEERING BLOCK	0	70	0	0
14	HUMANITIES BLOCK	0	70	0	0
15	ADMIN BLOCK	0	70	0	0
16	LIBRARY AND COMPUTER CENTRE	3	70	8	210
17	CARRIER DEVOLOPMENT CENTRE	0	70	0	0
18	MAIN CANTEEN	0	70	0	0
19	SUBSTATION -1	0	70	0	0
20	SUBSTATION -2	0	70	0	0
21	INNOVATION AND INGUBATION CENTRE	0	70	0	0
22	OLD SPORTS CENTRE	0	70	0	0
23	CSE ANNEX	0	70	0	0
24	GH -1(DOUBLE ROOM)	0	70	0	0
25	GH -2 (DOUBLE ROOM)	0	70	0	0
26	GH -3 (DOUBLE ROOM)	0	70	0	0
27	GH -4 (DOUBLE ROOM)	0	70	0	0
28	GH -5 (DOUBLE ROOM)	0	70	0	0
29	GH -6 (DOUBLE ROOM)	0	70	0	0
30	GH -7 (DOUBLE ROOM)	0	70	0	0
31	GH -8 (DOUBLE ROOM)	0	70	0	0
32	GH -1(COMMON ROOM)	0	70	0	0
33	GH -2 (COMMON ROOM)	0	70	0	0
34	GH -3 (COMMON ROOM)	0	70	0	0
35	GH -4 (COMMON ROOM)	0	70	0	0
36	GH -5 (COMMON ROOM)	0	70	0	0
37	GH -6 (COMMON ROOM)	0	70	0	0

SI. NO	BLOCK NAME	PEDASTAL FAN			
		No of Working Fixtures	Power rating (Watt)	Hours of Usage/day	Total Power Consumption (WH)
38	GH -7 (COMMON ROOM)	0	70	0	0
39	GH -8 (COMMON ROOM)	0	70	0	0
40	LH -1(DOUBLE ROOM)	0	70	0	0
41	LH-2(DOUBLE ROOM)	0	70	0	0
42	LH-3(TRIPLE ROOM)	0	70	0	0
43	LH-4(DOUBLE ROOM)	0	70	0	0
44	LH-5-A(SINGLE ROOM)	0	70	0	0
45	LH-5-B(SINGLE ROOM)	0	70	0	0
46	LH-6(TRIPLE ROOM)	0	70	0	0
47	LH -1(COMMON ROOM)	0	70	0	0
48	LH-2(COMMON ROOM)	0	70	0	0
49	LH-3(COMMON ROOM)	0	70	0	0
50	LH-4(COMMON ROOM)	0	70	0	0
51	LH-5-A(COMMON ROOM)	0	70	0	0
52	LH-5-B(COMMON ROOM)	0	70	0	0
53	LH-6(COMMON ROOM)	0	70	0	0

Table 7: Summary of Fan System

Sl. No	Types of Fan	Total No of Fittings	Power rating	(WH)
1	CEILING FAN	4454	70	2714600
2	EXAUST FAN	64	60	4200
3	WALL MOUNTING FAN	276	30	23610
4	PEDASTAL FAN	3	70	210

In the institution there is nearly 4733 fan system with power rating ranging from 30 W to 70 W in various departments, hostels, common room, guest room, canteen and 64 exhaust fans. The ceiling fan constitutes the highest number among all other fans. The Institution has just three pedestal fans.

Total Load by the fan system is 54,852 kWh per month

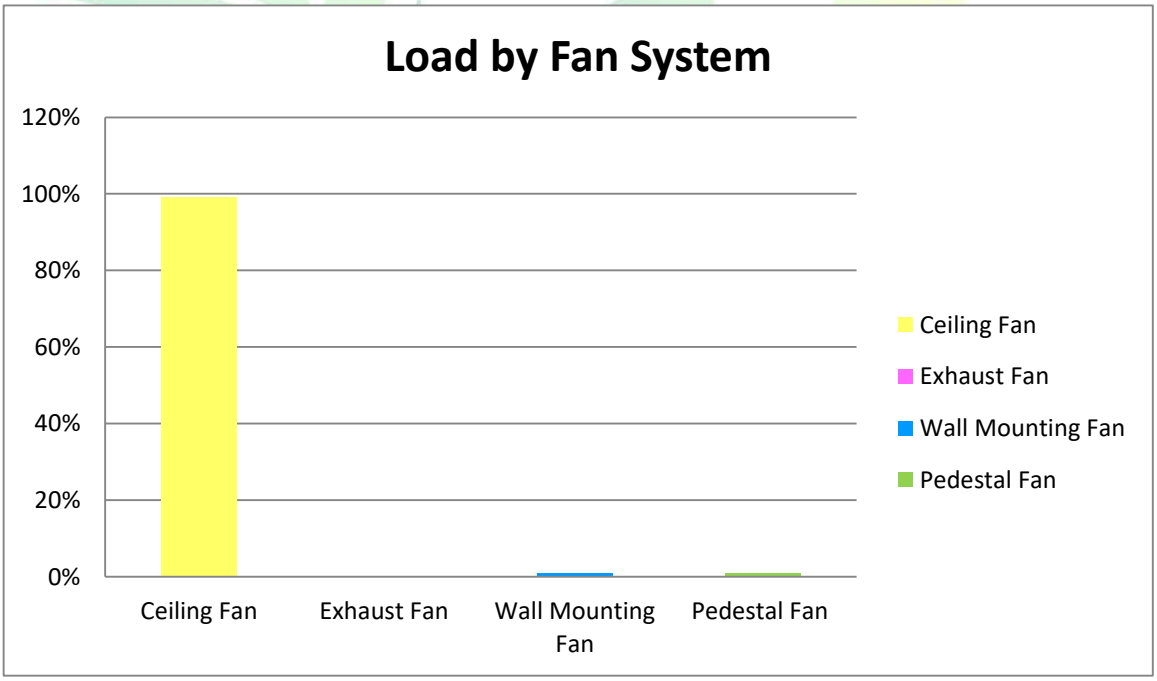

Figure 9: Total load distribution by various fan system

FAN SYSTEM

Figure 10: Fan fixtures in the campus

4.2.1. Observation and Comments

The institution has nearly 4733 fans in various departments, hostels, common room, guest room, canteen etc. During the audit it was observed that most of the Fan system installed at the institution were conventional types and their electricity consumption was very high. The ceiling fan has a power rating of 70 Watts.

We would like to recommend to replace old conventional fans with new energy efficient BLDC fan as per Star rating program by Bureau of Energy Efficiency as this will lead to huge amount of electricity saving. Detailed Energy Saving calculation for replacement of existing Conventional Ceiling fans with BLDC super energy efficient fan has been tabulated in the energy saving chapter.

Table 8: Energy Consumption: Ordinary Fans Vs BLDC Fans

Fan System	Wattage	Hourly Electricity Consumption	Daily Electricity Consumption (6hrs working)
Regular Fan	75 Watts	0.075 units	0.45 units
BLDC Fan	30 Watts	0.030 units	0.18 units

This table clearly indicates that BLDC fans are much efficient than conventional fans. BLDC fans consume a lesser amount of energy, without compromising much on the air delivery. BLDC stands for brush-less direct-current motor, a special type of motor which has permanent magnet instead of electromagnets found in a conventional induction motor.

The 5-star rated BLDC ceiling fans consumes 25-40 watts of energy, which is about 40-70% less than the regular old fans. Also, BLDC motor has important advantages over induction motor like low electricity consumption, lesser noise generation, improved reliability and better lifespan.

Based on audit observation, we would like insist replacing the regular fans with BLDC fans. Also, we would like to insist on conducting regular Cleaning and maintenance of Fan at least once in every 6 months to increase performance of Fan.

4.3. AIR CONDITIONING SYSTEM

There are various types of and number of split and window Air Conditioning system installed at various location in the College.

Table 9: Summary of different type of Air-conditioning System installed in the Institution

SI. No	Types of Fan	Total No of Fittings
1	Split	414
2	Duct Split	57
3	Cassette	59
4	Window	10
5	High Wall	17
6	Package	14
7	Mega split	213

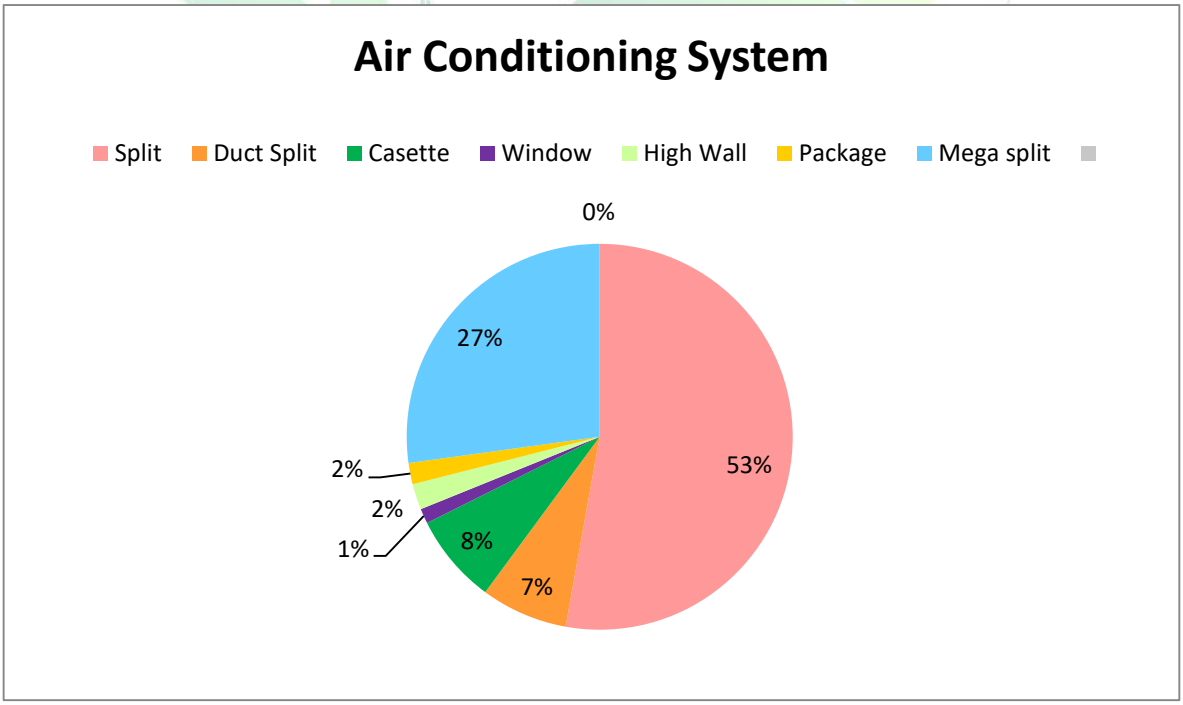

Figure 11: classification different type of Air-conditioning System installed in the Institution

Table 10: Details of Air Conditioning System Installed at Various Locations in the Institutions

Split A/C

Sl.No.	Location	Location	Type of A/C	Tonnage
1	Admin Block	Admin - President Room	Split	2.0
2	Admin Block	Admin - President Room	Split	1.5
3	Admin Block	Reception	Spilt	2.0
4	Admin Block	Dining Hall	Split	2.0
5	Admin Block	GM - Facilities	Split	1.5
6	Admin Block	Principal Room	Split	2.0
7	Admin Block	Principal Room - Waiting hall	Split	1.5
9	Admin Block	Accounts Department	split	3.0
8	Comp. Centre & Library	Server Room	Spilt	3.0
9	Comp. Centre & Library	Server Room	Spilt	3.0
10	ECE Block	HOD - Dr. Radha	Split	1.5
11	ECE Block	DSP Lab (ME Lab)	Spilt	3.0
12	ECE Block	Pro. Vijayalakshmi	Split	1.5
13	ECE Block	Research Dean	Split	2.0
14	ECE Block	Prof. JayaParvathi	Split	1.5
15	ECE Block	vacant	Split	1.5
16	ECE Block	Optical Network Lab	Split	2
17	ECE Block	Optical Network Lab	Split	2
18	ECE Block	Dr. R. Amutha	split	1.5
19	ECE Block	Dr. Ventakeshwaran	Split	2.0
20	ECE Block	Dr. Edna Elizabath	Split	1.5
21	ECE Block	Pro. Premanand	Split	1.5
22	ECE Block	Pro. Jawahar	split	1.5
23	ECE Block	Conference Hall	Split	1.5
24	ECE Block	Conference Hall	Split	1.5
25	ECE Block	ECE - Gulab Nabi Asath	Split	1.5
26	ECE Block	Low Power Computing Lab	split	1.5
27	ECE Block	Low Power Computing Lab	split	1.5
28	ECE Block	Low Power Computing Lab	split	1.5
29	ECE Block	Low Power Computing Lab	split	1.5
30	ECE Block	ECE - Under Water Aquatic Lab	Split	1.5
31	ECE Block	EEE - Prof. Samudra	Split	2.0
32	Mechanical Block	HOD - Dr. Annamalai	Split	2.0
33	Mechanical Block	Dean	Spilt	2.0
34	Mechanical Block	DR. Nallusamy	Split	2.0
35	Mechanical Block	Mechanical - CAD Lab	split	17.0
36	Mechanical Block	Prof.Koteeshwar Rao	Split	1.5
37	Mechanical Block	Seminar Hall	Split	2.5

Sl.No.	Location	Location	Type of A/C	Tonnage
38	Mechanical Block	Seminar Hall	Split	2.5
39	Mechanical Block	Seminar Hall	Split	2.5
40	Mechanical Block	Seminar Hall	Split	2.5
41	Mechanical Block	Workshop	Split	1.5
42	CSE Block	HOD - Chitra Babu	Split	1.5
43	CSE Block	SSN CTS Lab	Split	2.0
44	CSE Block	SSN CTS Lab	Split	2.0
45	CSE Block	SSN CTS Lab	Split	2.0
46	CSE Block	Dr. V.V. Prasad	Split	1.5
47	CSE Block	Prof. Samundeeswari	Split	1.5
48	CSE Block	inside Software Engineering Lab - shamona	Split	1.5
49	CSE Block	Conference Hall	Split	1.5
50	CSE Block	Conference Hall	Split	1.5
51	CSE Block	PG Lab - III	Split	2.0
52	CSE Block	Software Engineering Lab	Split	2.0
53	CSE Block	Software Engineering Lab	Split	2.0
54	CSE Block	Software Engineering Lab	Split	2.0
55	CSE Block	Software Engineering Lab	Split	2.0
56	CSE Block	Windows Programming Lab	Split	2.0
57	CSE Block	Software Engineering Lab	Split	2.0
58	CSE Block	Software Engineering Lab	Split	2.0
59	CSE Block	Software Engineering Lab	Split	2.0
60	CSE ANNEX Block	Server Room - Manager	Split	2.0
61	CSE ANNEX Block	Conference Room	Split	2.0
62	IT Block	vacant	Spilt	2.0
63	IT Block	HOD - Nagaraj	Spilt	1.5
64	IT Block	Dr. R. Srinivasan	Spilt	1.5
65	IT Block	Speech Research Lab	Split	2.0
66	IT Block	Speech Research Lab	Split	2.0
67	IT Block	Conference Hall	Split	1.5
68	IT Block	Conference Hall	Split	1.5
69	MBA/MCA Block	Linux Lab	Spilt	2.5
70	MBA/MCA Block	Linux Lab	Spilt	2.5
71	MBA/MCA Block	Project Lab	Spilt	2.5
72	MBA/MCA Block	Project Lab	Spilt	2.5
73	MBA/MCA Block	Director	Split	2.0
74	MBA/MCA Block	Professor - Vijayamani	Split	1.5
75	MBA/MCA Block	Director Alternative Room	Split	1.5
76	MBA/MCA Block	Conference Hall	Spilt	1.5
77	MBA/MCA Block	Conference Hall	Spilt	1.5
78	MBA/MCA Block	MBA - Prof Sri.Kumbarthi	split	1.5

Sl.No.	Location	Location	Type of A/C	Tonnage
79	MBA/MCA Block	MBA-Prof.R. Natraj	split	1.0
80	MBA/MCA Block	Library	split	2.5
81	MBA/MCA Block	Library	split	2.5
82	MBA/MCA Block	Library	split	2.5
83	EEE	HOD - Dr. V. Kamaraj	Split	1.5
84	EEE	SSN Crest	Spilt	3.0
85	EEE	Crystal Growth - UPS Room	Spilt	1.5
86	EEE	Crystal Growth - N.P. Rajesh	Spilt	1.5
87	EEE	Crystal Growth - Lab	Spilt	1.5
88	EEE	Conference Hall	Split	2.0
89	EEE	UPS Room - For 150 KVA UPS - GF	Split	1.5
90	EEE	Prof. Ranganath Muthu	Split	1.5
91	Research Centre	Director Room	split	2.0
92	Research Centre	Director Room	split	2.0
93	Research Centre	Vacant	Split	1.5
94	Research Centre	Instrumentation Lab	Split	2.0
95	Research Centre	Simulation Lab	Split	2.0
96	Research Centre	EEE - Research Lab	split	1.0
97	Research Centre	Research Lab	split	2.5
98	Research Centre	Research Lab	split	2.5
99	CHEMICAL ENGG	Dr. Parthiban	Spilt	2.0
100	CHEMICAL ENGG	Sophisticated Instrumentation Lab - Additional	Spilt	3.5
101	CHEMICAL ENGG	Environmental Lab	Split	1.0
102	CHEMICAL ENGG	XRD Lab	Split	2.0
103	CHEMICAL ENGG	XRD Lab	Split	2.0
104	CHEMICAL ENGG	Exam Cell	Split	1.5
105	CHEMICAL ENGG	Exam Cell	Split	1.0
106	CHEMICAL ENGG	Chemical - FF - Crystal growth lab	Split	1.5
107	BIO MEDICAL	HOD - Dr. Kavitha	Split	1.5
108	BIO MEDICAL	vacant	Split	1.5
109	BIO MEDICAL	Sound Proof Room	Spilt	1.5
110	BIO MEDICAL	Confrence Hall	split	2.0
111	BIO MEDICAL	Cell Culture Lab	split	2.5
112	BIO MEDICAL	Seminar Hall	Split	2.0
113	BIO MEDICAL	Seminar Hall	Split	2.0
114	BIO MEDICAL	Seminar Hall	Split	2.0
115	BIO MEDICAL	Seminar Hall	Split	2.0
116	BIO MEDICAL	Meeting Room	Split	2.0
117	BIO MEDICAL	BME Classroom - HCL Tech Bee	Spilt	1.5
118	BIO MEDICAL	BME Classroom - HCL Tech Bee	Spilt	1.5
119	BIO MEDICAL	BME Classroom - HCL Tech Bee	Spilt	1.5

Sl.No.	Location	Location	Type of A/C	Tonnage
120	BIO MEDICAL	BME Classroom - HCL Tech Bee	Spilt	1.5
121	BIO MEDICAL	BME Classroom - HCL Tech Bee	Spilt	1.5
122	BIO MEDICAL	BME Classroom - HCL Tech Bee	Spilt	1.5
123	BIO MEDICAL	HCL Classroom	Split	2.5
124	BIO MEDICAL	HCL Classroom	Split	2.5
125	BIO MEDICAL	HCL Classroom	Split	2.5
126	BIO MEDICAL	HCL Classroom	Split	2.5
127	BIO MEDICAL	HCL Classroom	Split	2.5
128	BIO MEDICAL	HCL Classroom	Split	2.5
129	BIO MEDICAL	HCL Classroom	Split	2.5
130	BIO MEDICAL	HCL Classroom	Split	2.5
131	BIO MEDICAL	HCL Classroom	Split	2.5
132	BIO MEDICAL	HCL Classroom	Split	2.5
133	BIO MEDICAL	HCL Classroom	Split	2.5
134	BIO MEDICAL	HCL Classroom	Split	2.5
135	BIO MEDICAL	HCL - UPS Room	Spilt	1.0
136	Main Auditorium	Auditorium	Split	1.0
137	MSIT	Director Room	Split	2.0
138	MSIT	Prof. Aravind	Spilt	1.5
139	MSIT	Class room - HCL Tech Bee	split	3.0
140	MSIT	Class room - HCL Tech Bee	split	3.0
141	MSIT	Class room - HCL Tech Bee	split	3.0
142	MSIT	Class room - HCL Tech Bee	split	3.0
143	MSIT	Class room - HCL Tech Bee	split	3.0
144	MSIT	Class room - HCL Tech Bee	split	3.0
145	MSIT	Class room - HCL Tech Bee	split	3.0
146	MSIT	Class room - HCL Tech Bee	split	3.0
147	MSIT	Class room - HCL Tech Bee	split	3.0
148	PG - Parents Room	Parents Room	split	1.5
149	PG - Parents Room	Parents Room	split	1.5
150	PG - Parents Room	Parents Room	split	1.0
151	PG - Parents Room	Parents Room	split	1.0
152	New PG - Boys Hostel VI	BH - VI - B - 15	Split	1.0
153	New PG - Boys Hostel VI	BH - VI - B	Split	1.0
154	New PG - Boys Hostel VI	BH - VI - B	Split	1.0
155	New PG - Boys Hostel VI	BH - VI - B	Split	1.0
156	New PG - Boys Hostel VI	BH - VI - B	Split	1.0
157	New PG - Boys Hostel VI	BH - VI - B	Split	1.0
158	New PG - Boys Hostel VI	BH - VI - B	Split	1.0
159	New PG - Boys Hostel VI	BH - VI - B	Split	1.0
160	New PG - Boys Hostel VI	BH - VI - B	Split	1.0

Sl.No.	Location	Location	Type of A/C	Tonnage
161	New PG - Boys Hostel VI	BH - VI - B	Split	1.0
162	New PG - Boys Hostel VI	Boys Hostel VI B Room No : 47	Split	1.0
163	New PG - Boys Hostel VI	Boys Hostel - VI B Room No : 58	Split	1.0
164	New PG - Boys Hostel VI	Boys Hostel - VI B Room No : 1	Split	1.0
165	New PG - Boys Hostel VI	Boys Hostel - VI B - Room No : 4	Split	1.0
166	New PG - Boys Hostel VI	Boys Hostel - VI B - Room No : 59	Split	1.0
167	New PG - Boys Hostel VI	Boys Hostel - VI C - Room No : FC1	split	1.0
168	New PG - Boys Hostel VI	Boys Hostel - VI B - Room No :48	Split	1.0
169	New PG - Boys Hostel VI	Boys Hostel - VI C - Room No : FC6	Split	1.0
170	New PG - Boys Hostel VI	Boys Hostel - VI C - Room No : FC9	Split	1.0
171	New PG - Boys Hostel VI	Boys Hostel - VII - Room No : 33	Split	1.0
172	New PG - Boys Hostel VI	Boys Hostel - VII - Room No : GG13	Split	1.0
173	New PG - Boys Hostel VI	Boys Hostel - VII - Room No : GG25	Split	1.0
174	New PG - Boys Hostel VI	Boys Hostel - VII - Room No : GG29	Split	1.0
175	New PG - Boys Hostel VI	Boys Hostel - VII - Room No : F20	Split	1.0
176	New PG - Boys Hostel VI	Boys Hostel - VII - Room No : F31	Split	1.0
177	New PG - Boys Hostel VI	Boys Hostel - VII - Room No : FB28	Split	1.0
178	New PG - Boys Hostel VI	Boys Hostel - VII - Room No : G8	Split	1.0
179	New PG - Boys Hostel VI	Boys Hostel - VI B	Split	1.0
180	New PG - Boys Hostel VI	Boys Hostel - VI B	Split	1.0
181	New PG - Boys Hostel VI	Boys Hostel - VII - F29	Split	1.0
182	New PG - Boys Hostel VI	Boys Hostel - VI B R.No: 67	Split	1.0
183	New PG - Boys Hostel VI	Boys Hostel - VI C R.No: FC 43	Split	1.0
184	Civil Engg Dept	Civil - Prof. Sababathi	Split	1.5
185	Civil Engg Dept	Civil - CAD Lab	split	11.0
186	Civil Engg Dept	Civil - CAD Lab	split	11.0
187	Civil Engg Dept	Civil - HOD	split	1.5
188	Civil Engg Dept	Prof. Srihari	split	1.5
189	Civil Engg Dept	Prof. RamanaGopal	Split	1.5
190	English Dept & Maths Dept	English - HOD	Split	1.5
191	English Dept & Maths Dept	English Lab	split	2.0
192	English Dept & Maths Dept	English Lab	split	2.0
193	English Dept & Maths Dept	English Lab	split	2.0
194	English Dept & Maths Dept	English Lab	split	2.0
195	English Dept & Maths Dept	English Lab	split	2.0
196	English Dept & Maths Dept	English Lab	split	2.0
197	English Dept & Maths Dept	Maths HOD	split	1.5
198	English Dept & Maths Dept	Maths Prof. Prabhavathi	split	1.0
199	Sports Complex	Gym	Split	2.0
200	Sports Complex	Gym	Split	2.0
201	Sports Complex	Gym	Split	2.0

Sl.No.	Location	Location	Type of A/C	Tonnage
202	Sports Complex	Gym	Split	2.0
203	Sports Complex	Gym	Split	2.0
204	Sports Complex	Ladies Gym	Split	2.0
205	Sports Complex	Ladies Gym	Split	2.0
206	Sports Complex	Ladies Gym	Split	2.0
207	Sports Complex	Cricket Ground	split	2.0
208	Sports Complex	Cricket Ground	split	2.0
209	Sports Complex	Cricket Ground	split	2.0
210	Sports Complex	Cricket Ground	split	2.0
211	Sports Complex	Cricket Ground	split	2.0
212	Sports Complex	Cricket Ground	split	2.0
213	Sports Complex	Umpire Room	split	1.0
214	Sports Complex	Cricket Ground - container	split	1.0
215	Sports Complex	Cricket Ground - container	split	1.0
216	Sports Complex	Cricket Ground - container	split	1.0
217	Sports Complex	Cricket Ground - container	split	1.0
218	Sports Complex	Foot Ball Ground - VIP Room	Split	1.5
219	Sports Complex	Foot Ball Ground - VIP Room	Split	1.5
220	Sports Complex	Foot Ball Ground - Player Room	Split	1.5
221	Sports Complex	Foot Ball Ground - Player Room	Split	1.5
222	Sports Complex	Foot Ball Ground - Manager Room	Split	1.0
223	Sports Complex	Foot Ball Ground - Manager Room	Split	1.0
224	Core Lab	Chemistry - HOD - Gayathri	split	1.5
225	Core Lab	Chemistry - Sunita Nair	split	1.5
226	Core Lab	Chemistry - Prita Nair	split	1.5
227	Core Lab	Chemistry - Research Lab	split	1.5
228	Core Lab	PHYSICS - HOD	split	1.5
229	Core Lab	Dr. Kennady	split	2.0
230	Core Lab	Physics Dept Lab (Siluvai Michale)	Split	1.0
231	Core Lab	Physics HOD - Lab	Split	1.0
232	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
233	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
234	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
235	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
236	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
237	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
238	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
239	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
240	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
241	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
242	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0

Sl.No.	Location	Location	Type of A/C	Tonnage
243	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
244	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
245	New Ladies Hostel - V	Ladies Hostel - V A	Split	1.0
246	New Ladies Hostel - V	Ladies Hostel - V A Room No : 8	split	1.0
247	New Ladies Hostel - V	Ladies Hostel - V A Room No : 9	Split	1.0
248	New Ladies Hostel - V	Ladies Hostel - V B ROOM No: G90	Split	1.0
249	New Ladies Hostel - V	Ladies Hostel - II Room No : B4	split	1.0
250	New Ladies Hostel - V	Ladies Hostel - II Room No : B3	split	1.0
251	New Ladies Hostel - V	Ladies Hostel - V A Room No : 7	Split	1.0
252	New Ladies Hostel - V	Ladies Hostel - V A Room No : 6	Split	1.0
253	New Ladies Hostel - V	Ladies Hostel - V A Room No : F9	Split	1.0
254	New Ladies Hostel - V	Ladies Hostel - V A Room No : F5	Split	1.0
255	New Ladies Hostel - V	Ladies Hostel - V A Room No : F15	Split	1.0
256	New Ladies Hostel - V	Ladies Hostel - V A Room No : F13	Split	1.0
257	New Ladies Hostel - V	Ladies Hostel - V A Room No : T7	split	1.0
258	New Ladies Hostel - V	Ladies Hostel - V A Room No : T9	split	1.0
259	New Ladies Hostel - V	Ladies Hostel - V B Room No : G103	split	1.0
260	New Ladies Hostel - V	Ladies Hostel - V B Room No : G104	split	1.0
261	New Ladies Hostel - V	Ladies Hostel - V B Room No : G105	split	1.0
262	New Ladies Hostel - V	Ladies Hostel - V A Room No : F10	split	1.0
263	New Ladies Hostel - V	Ladies Hostel - V A Room No : T6	Split	1.0
264	New Ladies Hostel - V	Ladies Hostel - V A Room No : S4	Split	1.0
265	New Ladies Hostel - V	Ladies Hostel - V A Room No : F7	split	1.0
266	New Ladies Hostel - V	Ladies Hostel - V A Room No : T4	split	1.0
267	New Ladies Hostel - V	Ladies Hostel - V A Room No : T5	Split	1.0
268	New Ladies Hostel - V	Ladies Hostel - V A Room No : F8	Split	1.0
269	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: T8	Split	1.0
270	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: S5	Split	1.0
271	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F6	Split	1.0
272	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F11	Split	1.0
273	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F12	Split	1.0
274	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F14	Split	1.0
275	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F16	Split	1.0
276	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F17	Split	1.0
277	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F18	Split	1.0
278	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F19	Split	1.0
279	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F91	Split	1.0
280	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: F92	Split	1.0
281	New Ladies Hostel - V	Ladies Hostel - V A ROOM No: S6	Split	1.0
282	New Ladies Hostel - V	Ladies Hostel - V A R.NO F1	Split	1.0
283	New Ladies Hostel - V	Ladies Hostel - V A R.NO F2	Split	1.0

Sl.No.	Location	Location	Type of A/C	Tonnage
284	New Ladies Hostel - V	Ladies Hostel - V A S2	Split	1.0
285	New Ladies Hostel - V	Ladies Hostel - V A S3	Split	1.0
286	New Ladies Hostel - V	Ladies Hostel - V A S7	Split	1.0
287	New Ladies Hostel - V	Ladies Hostel - V A S8	Split	1.0
288	New Ladies Hostel - V	Ladies Hostel - V A S9	Split	1.0
289	New Ladies Hostel - V	Ladies Hostel - V A S10	Split	1.0
290	New Ladies Hostel - V	Ladies Hostel - V A S11	Split	1.0
291	New Ladies Hostel - V	Ladies Hostel - V A S12	Split	1.0
292	New Ladies Hostel - V	Ladies Hostel - V A S13	Split	1.0
293	New Ladies Hostel - V	Ladies Hostel - V A S14	Split	1.0
294	New Ladies Hostel - V	Ladies Hostel - V A S15	Split	1.0
295	New Ladies Hostel - V	Ladies Hostel - V A S16	Split	1.0
296	New Ladies Hostel - V	Ladies Hostel - V A S17	Split	1.0
297	New Ladies Hostel - V	Ladies Hostel - V A S18	Split	1.0
298	New Ladies Hostel - V	Ladies Hostel - V A S19	Split	1.0
299	Innovation Centre	Innovation Centre	Split	2.0
300	Innovation Centre	Innovation Centre	split	1.5
301	Innovation Centre	Innovation Centre	split	1.5
302	Innovation Centre	Innovation Centre	Split	2.0
303	Innovation Centre	FF - Room No : 39	Split	1.0
304	International Boys Hostel	GF - Room No: 1	Split	1.0
305	International Boys Hostel	GF - Room No : 2	Split	1.0
306	International Boys Hostel	GF - Room No : 3	Split	1.0
307	International Boys Hostel	GF - Room No : 4	Split	1.0
308	International Boys Hostel	GF - Room No : 5	Split	1.0
309	International Boys Hostel	GF - Room No : 6	Split	1.0
310	International Boys Hostel	GF - Room No : 7	Split	1.0
311	International Boys Hostel	GF - Room No : 8	Split	1.0
312	International Boys Hostel	GF - Room No : 9	Split	1.0
313	International Boys Hostel	GF - Room No : 10	Split	1.0
314	International Boys Hostel	GF - Room No : 11	Split	1.0
315	International Boys Hostel	GF - Room No : 12	Split	1.0
316	International Boys Hostel	GF - Room No : 13	Split	1.0
317	International Boys Hostel	GF - Room No : 14	Split	1.0
318	International Boys Hostel	GF - Room No : 16	Split	1.0
319	International Boys Hostel	GF - Room No : 15	Split	1.0
320	International Boys Hostel	GF - Room No : 28	Split	1.0
321	International Boys Hostel	GF - Room No : 29	Split	1.0
322	International Boys Hostel	GF - Room No : 27	Split	1.0
323	International Boys Hostel	GF - Room No : 26	Split	1.0
324	International Boys Hostel	GF - Room No : 25	Split	1.0

Sl.No.	Location	Location	Type of A/C	Tonnage
325	International Boys Hostel	GF - Room No : 24	Split	1.0
326	International Boys Hostel	GF - Room No : 23	Split	1.0
327	International Boys Hostel	GF - Room No : 22	Split	1.0
328	International Boys Hostel	GF - Room No : 21	Split	1.0
329	International Boys Hostel	GF - Room No : 33	Split	1.0
330	International Boys Hostel	GF - Room No : 34	Split	1.0
331	International Boys Hostel	GF - Room No : 17	Split	1.0
332	International Boys Hostel	GF - Room No : 18	Split	1.0
333	International Boys Hostel	GF - Room No : 19	Split	1.0
334	International Boys Hostel	GF - Room No - 20	Split	1.0
335	International Boys Hostel	FF - Room No : 1	Split	1.0
336	International Boys Hostel	FF - Room No : 2	Split	1.0
337	International Boys Hostel	FF - Room No : 3	Split	1.0
338	International Boys Hostel	FF - Room No : 4	Split	1.0
339	International Boys Hostel	FF - Room No : 5	Split	1.0
340	International Boys Hostel	FF - Room No : 6	Split	1.0
341	International Boys Hostel	FF - Room No : 7	Split	1.0
342	International Boys Hostel	FF - Room No : 8	Split	1.0
343	International Boys Hostel	FF - Room No : 9	Split	1.0
344	International Boys Hostel	FF - Room No : 10	Split	1.0
345	International Boys Hostel	FF - Room No : 11	Split	1.0
346	International Boys Hostel	FF - Room No : 12	Split	1.0
347	International Boys Hostel	FF - Room No : 13	Split	1.0
348	International Boys Hostel	FF - Room No : 14	Split	1.0
349	International Boys Hostel	FF - Room No : 15	Split	1.0
350	International Boys Hostel	FF - Room No : 16	Split	1.0
351	International Boys Hostel	FF - Room No : 17	Split	1.0
352	International Boys Hostel	FF - Room No : 18	Split	1.0
353	International Boys Hostel	FF - Room No : 19	Split	1.0
354	International Boys Hostel	FF - Room No : 20	Split	1.0
355	International Boys Hostel	FF - Room No : 21	Split	1.0
356	International Boys Hostel	FF - Room No : 22	Split	1.0
357	International Boys Hostel	FF - Room No : 23	Split	1.0
358	International Boys Hostel	FF - Room No : 24	Split	1.0
359	International Boys Hostel	FF - Room No : 25	Split	1.0
360	International Boys Hostel	FF - Room No : 26	Split	1.0
361	International Boys Hostel	FF - Room No : 27	Split	1.0
362	International Boys Hostel	FF - Room No : 28	Split	1.0
363	International Boys Hostel	FF - Room No : 29	Split	1.0
364	International Boys Hostel	FF - Room No : 30	Split	1.0
365	International Boys Hostel	FF - Room No : 42	Split	1.0

Sl.No.	Location	Location	Type of A/C	Tonnage
366	International Boys Hostel	FF - Room No : 43	Split	1.0
367	International Boys Hostel	FF - Room No : 44	Split	1.0
368	International Boys Hostel	FF - Room No : 45	Split	1.0
369	International Boys Hostel	FF - Room No : 46	Split	1.0
370	International Boys Hostel	FF - Room No : 47	Split	1.0
371	International Boys Hostel	FF - Room No : 48	Split	1.0
372	International Boys Hostel	SF-Room No : 9	Split	1.0
373	International Boys Hostel	SF-Room No : 10	Split	1.0
374	International Boys Hostel	Dinning hall	Spilt	2.0
375	International Boys Hostel	Dinning hall	Spilt	2.0
376	International Boys Hostel	Dinning hall	Spilt	2.0
377	International Boys Hostel	Dinning hall	split	2.0
378	International Boys Hostel	Dinning hall	split	2.0
379	International Boys Hostel	TV Hall	spit	2.0
380	International Boys Hostel	TV Hall	spit	2.0
381	International Boys Hostel	TV Hall	spit	2.0
382	International Boys Hostel	TV Hall	split	2.0
383	OAT	Open Theatre	split	2.0
384	OAT	Open Theatre	split	1.0
385	OAT	Open Theatre	split	1.0
386	B6 Staff Quarters	Dinning Hall - GF	split	2.0
387	B6 Staff Quarters	TV Hall - GF	split	2.0
388	B6 Staff Quarters	Bed Room - GF	split	2.0
389	B6 Staff Quarters	Master Bed Room - FF	split	2.0
390	B6 Staff Quarters	Bed Room - FF	split	2.0
391	Room	SF-Room No : 23	Split	1.0
392	Room	SF-Room No : 24	Split	1.0
393	Room	SF-Room No : 25	Split	1.0
394	Room	SF-Room No : 28	Split	1.0
395	Room	SF-Room No : 32	Split	1.0
396	Room	SF-Room No : 33	Split	1.0
397	Room	SF-Room No : 34	Split	1.0
398	Room	SF-Room No : 35	Split	1.0
399	Room	SF-Room No : 36	Split	1.0
400	Room	SF-Room No : 37	Split	1.0
401	Room	SF-Room No : 38	Split	1.0

Sl.No.	Location	Location	Type of A/C	Tonnage
402	Room	SF-Room No : 39	Split	1.0
403	Room	SF-Room No : 40	Split	1.0
404	Room	SF-Room No : 41	Split	1.0
405	Room	SF-Room No : 42	Split	1.0
406	Room	SF-Room No : 43	Split	1.0
407	Room	Removed from BH - VI B R.NO B56	split	1.0
408	Room	HR	split	1.0
409	Room	Director -MBA	Split	2.0
410	Room	Dining Hall - Admin	Spilt	2.0
411	Room	Crystal Growth	Spilt	2.0
412	Room	Physics - Prof. Kennady	split	1.5
413	Room	PG Lab - II	Split	2.0
414	Room	PG Lab - II	Split	2.0

Duct Split

Sl.No	Location	Location	Type of AC	Tonnage
1	Comp. Centre & Library	Data centre	Duct Split	8.5
2	Comp. Centre & Library	Journal Section	Duct Split	8.5
3	Comp. Centre & Library	Library - Computer Room	Duct Split	8.5
4	Comp. Centre & Library	IT - Charles babbage lab	Duct Split	8.5
5	Comp. Centre & Library	IT - Charles babbage lab	Duct Split	8.5
6	Comp. Centre & Library	Librarian Room	Duct Split	5.8
7	Comp. Centre & Library	Reading Hall	Duct Split	8.5
8	Comp. Centre & Library	Reading Hall	Duct Split	8.5
9	Comp. Centre & Library	Reading Hall	Duct Split	8.5
10	Comp. Centre & Library	Reading Hall	Duct Split	8.5
11	Comp. Centre & Library	Network Program Lab - OS Lab	Duct Split	8.5
12	ECE Block	Microwave Lab	Duct Split	5.8
13	ECE Block	Microwave Lab	Duct Split	5.8
14	ECE Block	DSP Lab	Duct Split	8.5
15	ECE Block	Seminar Hall	Duct Split	5.8
16	ECE Block	Seminar Hall	Duct Split	5.8
17	ECE Block	New VLSI Lab	Duct Split	5.8
18	ECE Block	New VLSI Lab	Duct Split	8.5
19	Mechanical Block	PG Lab	Duct Split	11.0

Sl.No	Location	Location	Type of AC	Tonnage
20	CSE Block	Java Lab	Duct Split	11.0
21	CSE Block	Multimedia Lab	Duct Split	11.0
22	CSE Block	PG Lab - I	Duct Split	11.0
23	IT Block	Research Lab	Duct Split	8.5
24	IT Block	AlainTuring Lab	Duct Split	11.0
25	IT Block	OS Lab	Duct Split	11.0
26	IT Block	Von Nueman Lab	Duct Split	11.0
27	IT Block	Software Engineering Lab	Duct Split	11.0
28	MBA/MCA Block	Main Lab - 1	Duct Split	8.5
29	MBA/MCA Block	Main Lab - 2	Duct Split	8.5
30	MBA/MCA Block	Seminar Hall	Duct Split	5.8
31	MBA/MCA Block	Seminar Hall	Duct Split	8.5
32	Guest House	Room - 1	Duct Split	2.0
33	Guest House	Room - 2	Duct Split	2.0
34	Guest House	Room - 3	Duct Split	2.0
35	Guest House	Room - 4	Duct Split	2.0
36	Guest House	Room - 5	Duct Split	2.0
37	Guest House	Room - 6	Duct Split	2.0
38	Guest House	Dining & Reception	Duct Split	8.75
39	EEE	Embedded System Lab	Duct split	11.0
40	EEE	Embedded System Lab	Duct split	11.0
41	EEE	Seminar Hall	Duct Split	11.0
42	EEE	Seminar Hall	Duct Split	5.5
43	CHEMICAL ENGG	Computer Lab	Duct Split	11.0
44	CHEMICAL ENGG	Computer Lab	Duct Split	11.0
45	BIO MEDICAL	BMI Lab	Duct Split	11.0
46	BIO MEDICAL	BMI Lab	Duct Split	11.0
47	BIO MEDICAL	Bio science Lab	Duct Split	11.0
48	BIO MEDICAL	Bio science Lab	Duct Split	11.0
49	BIO MEDICAL	Diagnostic Therapy Lab	Duct Split	11.0
50	BIO MEDICAL	Diagnostic Therapy Lab	Duct Split	11.0
51	Placement Block	Passage 04 (A14-13)	Duct Split	2.0
52	Placement Block	Passage 04 (A14-13)	Duct Split	4.0
53	Placement Block	Passage 03 (A3-A4)	Duct Split	4.0
54	Placement Block	Passage 02 (A1-A2)	Duct Split	4.0
55	Placement Block	Passage 01 (B1-B2)	Duct Split	4.0
56	Placement Block	Utility	Duct Split	7.5
57	Placement Block	Utility	Duct Split	7.5

Cassette AC

SI.No.	Location	Location	Type of AC	Tonnage
1	Admin Block	Conference Hall	Cassette	6.0
2	Admin Block	AR Room	Cassette	1.5
3	ECE Block	ECE Class room - HCL Tech Bee	Cassette	3.0
4	ECE Block	ECE Class room - HCL Tech Bee	Cassette	3.0
5	ECE Block	ECE Class room - HCL Tech Bee	Cassette	3.0
6	ECE Block	ECE Class room - HCL Tech Bee	Cassette	3.0
7	CSE ANNEX Block	FF - Laboratory - 02	Cassette	4.0
8	CSE ANNEX Block	FF - Laboratory - 02	Cassette	4.0
9	CSE ANNEX Block	FF- CSE Lab - 01	Cassette	4.0
10	CSE ANNEX Block	FF- CSE Lab - 01	Cassette	4.0
11	CSE ANNEX Block	FF - Laboratory - 04	Cassette	4.0
12	CSE ANNEX Block	FF - Laboratory - 04	Cassette	4.0
13	CSE ANNEX Block	FF - Monitoring Room	Cassette	4.0
14	CSE ANNEX Block	SF - Laboratory - 05	Cassette	4.0
15	CSE ANNEX Block	SF - Laboratory - 05	Cassette	4.0
16	CSE ANNEX Block	CSE Lab - 03	Cassette	4.0
17	CSE ANNEX Block	CSE Lab - 03	Cassette	4.0
18	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
19	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
20	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
21	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
22	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
23	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
24	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
25	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
26	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
27	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
28	BIO MEDICAL	BME Classroom - HCL Tech Bee	Cassette	4.0
29	Sports Complex	Foot Ball Ground	Cassette	2.0
30	Sports Complex	Foot Ball Ground	Cassette	2.0
31	Sports Complex	Foot Ball Ground	Cassette	2.0
32	Sports Complex	Foot Ball Ground	Cassette	2.0
33	Innovation Centre	Innovation Centre	Cassette	4.0
34	Innovation Centre	Innovation Centre	Cassette	4.0
35	Placement Block	Dean	Cassette	1.0
36	Placement Block	Placement Officer	Cassette	1.0
37	Placement Block	Office	Cassette	1.0
38	Placement Block	Interview Room C2	Cassette	1.0
39	Placement Block	Interview Room C3	Cassette	1.0
40	Placement Block	Interview Room C4	Cassette	1.0

Sl.No.	Location	Location	Type of AC	Tonnage
41	Placement Block	Interview Room C5	Cassette	1.0
42	Placement Block	Interview Room C1	Cassette	2.0
43	Placement Block	Discussion Room	Cassette	2.0
44	Placement Block	Pantry	Cassette	3.0
45	Placement Block	Student Waiting Hall	Cassette	4.0
46	Placement Block	Student Waiting Hall	Cassette	4.0
47	Placement Block	Waiting Hall - SF	Cassette	3.0
48	Placement Block	Waiting Hall - SF	Cassette	3.0
49	Placement Block	Waiting Hall - SF	Cassette	3.0
50	Placement Block	Waiting Hall - SF	Cassette	3.0
51	Placement Block	Waiting Hall - SF	Cassette	3.0
52	Placement Block	Waiting Hall - SF	Cassette	3.0
53	Placement Block	Waiting Hall - SF	Cassette	3.0
54	Placement Block	Waiting Hall - SF	Cassette	3.0
55	Placement Block	Waiting Hall - SF	Cassette	3.0
56	Placement Block	CDC Hall	Cassette	1.5
57	Placement Block	CDC Hall	Cassette	1.5
58	Main Auditorium	Auditorium - VIP Room	Cassette	4.0
59	Main Auditorium	Auditorium - VIP Room	Cassette	4.0

Window A/C

Sl.No.	Location	Location	Type of AC	Tonnage
1	Admin Block	Civil Maintenance Staff Room	Window	1.5
2	CSE Block	Professor - Milton	Window	1.5
3	CSE Block	Pro. Aravindan	Window	1.5
4	IT Block	Prof. Shahina	Window	1.5
5	MBA/MCA Block	Prof. Ashok kumar	Window	1.5
6	EEE	Prof. A.N. Aravindan	Window	1.5
7	EEE	Pandiayarajan	Window	1.5
8	EEE	Pro. V. Rajini	Window	1.5
9	EEE	vacant	Window	1.5
10		GM & Facilities - PG BH	Window	1.5

High Wall AC

Sl.No.	Location	Location	Type of AC	Tonnage
1	ECE Block	Research Lab	High Wall	1.5
2	ECE Block	Research Lab	High Wall	1.5
3	ECE Block	Research Lab	High Wall	1.5
4	ECE Block	Research Lab	High Wall	1.5
5	ECE Block	Dr. K.T. Selvam	High Wall	1.5
6	Mechanical Block	CNC Machine-workshop	H.W Split	1.5
7	CSE Block	Prof. Mirnalini	High Wall	1.5
8	MBA/MCA Block	MBA - HOD	High Wall	1.5
9	MBA/MCA Block	Prof - Dr. K. Sambath	High Wall	1.5
10	MBA/MCA Block	Guest Faculty Room	High Wall	1.5
11	CHEMICAL ENGG	Exam Cell	High Wall	1.5
12	CHEMICAL ENGG	Exam Cell	High Wall	1.5
13	BIO MEDICAL	HCL - UPS Room	High Wall	2.0
14	MSIT	Conference Hall	High Wall	2.0
15	MSIT	Conference Hall	High Wall	1.5
16	MSIT	Asst. Director Room	High Wall	1.5
17	MSIT	HOD - Nagarajan - IT	High Wall	1.5

Package

Sl.No.	Location	Location	Type of AC	Tonnage
1	ECE Block	Conference Hall	package	11.0
2	ECE Block	Conference Hall	package	11.0
3	Main Auditorium	Auditorium	Package	16.5
4	Main Auditorium	Auditorium	Package	16.5
5	Main Auditorium	Auditorium	Package	16.5
6	Main Auditorium	Auditorium	Package	16.5
7	Main Auditorium	Auditorium	Package	16.5
8	Main Auditorium	Auditorium	Package	16.5
9	Main Auditorium	Auditorium	Package	16.5
10	Mini Auditorium	Mini Audi	Package	16.5
11	Mini Auditorium	Mini Audi	Package	16.5
12	MSIT	Lecturer Hall	Package	8.75
13	MSIT	Software Engineering Lab	Package	8.75
14	MSIT	Embedded System Lab	Package	16.5

MEGA SPLIT AC

Sl.No.	Location	Location	Type of AC	Tonnage
1	CSE Block	CSE - Seminar Hall	Mega split	2.5
2	CSE Block	CSE - Seminar Hall	Mega split	2.5
3	CSE Block	CSE - Seminar Hall	Mega split	2.5
4	CSE Block	CSE - Seminar Hall	Mega split	2.5
5	CSE Block	CSE - Seminar Hall	Mega split	2.5
6	CSE Block	CSE - Seminar Hall	Mega split	2.5
7	CSE Block	High Performance Lab	Mega split	2.5
8	CSE Block	High Performance Lab	Mega split	2.5
9	CSE Block	High Performance Lab	Mega split	2.5
10	CSE Block	High Performance Lab	Mega split	2.5
11	IT Block	IT - Seminar Hall	Mega split	2.5
12	IT Block	IT - Seminar Hall	Mega split	2.5
13	IT Block	IT - Seminar Hall	Mega split	2.5
14	IT Block	IT - Seminar Hall	Mega split	2.5
15	IT Block	IT - Seminar Hall	Mega split	2.5
16	IT Block	IT - Seminar Hall	Mega split	2.5
17	IT Block	IT - PG LAB	Mega split	2.5
18	IT Block	IT - PG LAB	Mega split	2.5
19	IT Block	IT - PG LAB	Mega split	2.5
20	IT Block	IT - PG LAB	Mega split	2.5
21	Guest House	Room - 1	Multi split	3.0
22	CHEMICAL ENGG	Seminar Hall	Mega split	2.5
23	CHEMICAL ENGG	Seminar Hall	Mega split	2.5
24	CHEMICAL ENGG	Seminar Hall	Mega split	2.5
25	CHEMICAL ENGG	Seminar Hall	Mega split	2.5
26	CHEMICAL ENGG	Seminar Hall	Mega split	2.5
27	CHEMICAL ENGG	Seminar Hall	Mega split	2.5

AIR-CONDITIONING SYSTEM

Figure 12: Air conditioner system in the campus

4.3.1. Observation and Comments

The institution has 784 units installed in various locations across the institution. Majority of these Air Conditioning systems are of Split A/C type and only few (just 10) are window A/C. Split A/C consumes less power than window A/C. So, installation of Split A/C instead of Window A/C is an appreciable step taken by the institution towards power saving.

During the audit, it was observed that almost all A/C units are of 3 star rated A/C and none of the units are 5 stars rated. 5 Star rated A/C consume less power and is more energy efficient than 3 star rated A/C Units. Comparison of the between 3Star and 5 Star A/C is given below.

Table 11: Energy Efficiency Ratio based on Number of Stars for Split A/C and Window A/C

Number of stars and EER of Split A/C units

Number of Stars	Minimum EER	Maximum EER
1 Star	3.10	3.29
2 Star	3.30	3.49
3 Star	3.50	3.99
4 Star	4.0	4.99
5 Star	4.50	

Number of Stars and EER of Window A/C units

Number of Stars	Minimum EER	Maximum EER
1 Star	2.50	3.29
2 Star	2.70	2.80
3 Star	2.90	3.09
4 Star	3.10	3.29
5 Star	3.30	

Table 12: Power Consumption based on Number of Stars for Split A/C and Window A/C

Power consumed by split A/C

Number of Stars	1 Ton	1.5 Ton	2 Ton
1 Star	1100 W	1651 W	2200 W
2 Star	1036 W	1554 W	2071 W
3 Star	940 W	1408 W	1878 W
4 Star	782 W	1174 W	1565 W
5 Star	781 W	1172 W	1562 W

Power consumed by window A/C

Number of Stars	1 Ton	1.5 Ton	2 Ton
1 Star	1355 W	2032 W	2710 W
2 Star	1279 W	1918 W	2557 W
3 Star	1174 W	1761 W	2348 W
4 Star	1100 W	1650 W	2200 W
5 Star	1065 W	1599 W	2131 W

During the audit it was observed that majority of the A/C were 3 star rated A/C and lead to high power consumption. The Air conditioning system load exerted the majority load consumption of the Institution. The total load exerted by A/C is 1,27,040 KWH per month.

The comparison table clearly shows that 3 Star Split A/C has energy efficiency ratio in the range of 3.50-3.399, while a 5 Star Split A/C has energy efficiency ratio 4.50. While the energy efficiency ratio of 3 Star Window A/C is 2.9-3.09 and that of 5 Star Window A/C is 3.3. This clearly shows that Split A/C is much better than Window A/C and 5 Star Split A/C is more energy efficient than 3 Star Window A/C, 3 Star Split & 5 Star Window A/C.

The comparison chart on power consumption clearly indicates that power consumed by 1.5-ton 3 star split A/C is much higher than 1.5-ton 5 star split A/C. It is clearly evident from the table that power consumed by 1.5-ton 3 Star Window A/C is much higher than 1.5-ton 5 Star Window A/C and even higher than 1.5-ton 3 star split A/C and 1.5-ton 5 star split

A/C. This clearly indicated that Split A/C are much better than Window A/C, so higher the rating more the energy efficiency and lesser the power consumption.

Hence based on the audit we would like to recommend to replace the old 3 star rated A/C with 5 star rated Split Air Conditioning system as per Star levelling program by Bureau of Energy Efficiency which will lead to huge reduction in power consumption in the institution.

4.4. OTHER EQUIMENTS LOAD

There are different types of other equipment like Printer, PC, Water Cooler, Refrigerator and other lab equipment are installed at various location in the College and they also contribute electricity consumption

Table 13: Details of other type equipment

Description	No of Units	Wattage	Power Consumed per day WH
Desktops (without Monitor)	2132	120	2046.72
Laptops	531	50	212.4
Workstations	45	1100	396
TFT Monitors	2224	30	533.76
Printer (DMP)	4	15	0.12
Printer (Laser jet)	90	550	99
Printer (Multi-Functional)	40	1000	80
Scanner	19	12	0.456
Treadmills	6	2000	72
Tummy vibrators	2	1000	6

OTHER EQUIPMENTS

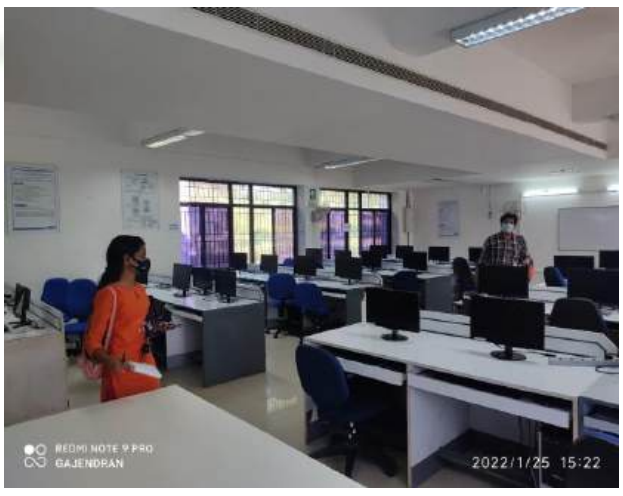

Figure 13: Other Equipment's in the campus

4.4.1. Observation and Comments

The Institution has 2132 Desktop without Monitor and 531 Laptops.

Computers and monitors account for major portion of the energy used by office equipment. But their energy consumption is second only to office lighting. Other office equipment at the college were TFT Monitors, Printers, Scanners etc. The institution used various types of printers like Inkjet, Laser Jet DMP etc. The institution had 2224 TMT Monitors, and 134 Printers. Only 19 scanners were accounted during the audit. During the audit it was noted that the Institution had a functional Gym with six treadmill and two Tummy vibrators. These had a power rating of 2000 watts and 1000 watts respectively.

4.5. UPS

The Institution has been using various UPS battery on the necessary instruments and devices.

Table 14: UPS details of the campus

SI. NO	Make	Model	FAR #	Building	Location	Rating in KVA	Battery (12V) Specification	Battery Model	Battery Company	No of Batteries Qty
1	Frontline			ADMIN	Reception	3	40 Ah	Tubular	Exide	8
2	Frontline		SSN/C&H/UPS/00114	ADMIN	All Staff	10	65 Ah	SMF	Amaron Quanta	20
3	Frontline			Bio-Medical	Diag & Theraptic Lab - FF	10	42 Ah	SMF	Amaron Quanta	20
4	Microchip			ECE	Optical Research Lab-ECE - FF-UPS Room	10	40 Ah	Tubular	Exide	20
5	Foredot	Transformer		ECE	Annexure block - Room # ECE039	20	66 Ah	Tubular	Exide	20
6	Frontline	FSS10K		Chemical - 3rd Floor	Exam Cell Data Centre UPS Room	10	42 Ah	SMF	Amaron Quanta	20
7	Frontline	Transformer	SSN/SOMCA/UPS/00016	Library FF \ Computer Centre	FF Mechanical - PG Class room # LB16	20	65 Ah	SMF	Amaron Quanta	20
8	Microchip			Computer Centre	GF (UPS Room) Charless babage lab (IT) (NEW) - Library Block	10	42 Ah	SMF	Amaron Quanta	20
9	Microchip		SSN/C&H/UPS/00113	CORE Lab	Chemistry Ms.Mahalakshmi	3	65 Ah	SMF	Amaron Quanta	8
10	Microchip			CORE Lab	Chemistry - Mr.Siluvai Michale project	10	42 Ah	SMF	Amaron Quanta	20

SI. NO	Make	Model	FAR #	Building	Location	Rating in KVA	Battery (12V) Specification	Battery Model	Battery Company	No of Batteries Qty
11	DSP India	Transformer	SSN/C&H/UPS/00074	Cristal Growth (EEE SF)	Cristal Growth Lab new ups - P. Rajesh - UPS # 8	10	42 Ah	SMF	Amaron Quanta	20
12	Microchip			PHYSICS Department	Staff Room	3	40 Ah	Tubular	Exide	8
13	Frontline			PHYSICS Department	Lab Mr.Kennady	3	40 Ah	Tubular	Exide	8
14	Microchip		SSN/C&H/UPS/00092	PHYSICS Department	Lab - HOD	5	40 Ah	Tubular	Exide	10
15	Foredot	Transformer		EEE	Simulation Lab (EW) - FF - EE12	20	EL 66 Ah	Tubular	Exide	20
16	Frontline	Transformer	SSN/C&H/UPS/00012	EEE	PG Simulation Lab (WW) - FF - RC12	15	6 EL 75 Ah	Tubular	Exide	20
17	Frontline	Transformer		ECE	Mems Lab - FF	10	42 Ah	SMF	Amaron Quanta	20
18	Microchip	Transformer	SSN/C&H/UPS/00009	EEE	Staff Room - FF - EE 111	3	EL 40 Ah	Tubular	Exide	8
19	Frontline	Transformer		Cristal Growth (EEE SF)	Cristal Growth Lab - UPS # 5 Williams & Govindaraj	20	EL 40 Ah	Tubular	Exide	20
20	Frontline	Transformer		ECE	Microprocessor & Microwave Lab (new 10 KVA)	10	42 Ah	SMF	Amaron Quanta	20
21	Foredot	Transformer		ECE	PG Lab - II (NEW)	6	42 Ah	SMF	Amaron Quanta	10
22	Frontline	FSS10K		Cristal Growth (EEE SF)	Cristal Growth Lab - UPS # 15 - Dean Sir Projector and Office machine	10	6 EL 40 Ah	Tubular	Exide	16

SI. NO	Make	Model	FAR #	Building	Location	Rating in KVA	Battery (12V) Specification	Battery Model	Battery Company	No of Batteries Qty
23	Shine	SPS10000	SSN/C&H/UPS/00072	Cristal Growth (EEE SF)	Cristal Growth Lab new ups - P. Rajesh - UPS # 9	10	EL 40 Ah	Tubular	Exide	20
24	Frontline	Transformer		Cristal Growth (EEE SF)	New UPS Senthil pandiyan - UPS # 2	10	EL 60 Ah	Tubular	Exide	20
25	Frontline	Transformer	SSN/C&H/UPS/00075	Cristal Growth (EEE SF)	Lab - Karunakaran - UPS # 7	10	6 EL 40 Ah	Tubular	Exide	20
26	Frontline	Transformer		Cristal Growth (EEE SF)	Cristal Growth Lab - Govindaraji- UPS - 4	10	EL 60 Ah	Tubular	Exide	20
27	Frontline			Cristal Growth (EEE SF)	Cristal Growth Lab - Govindaraj - UPS # 3	5	40 Ah	Tubular	Exide	10
28	Frontline	Transformer		Cristal Growth (EEE SF)	Cristal Growth Lab - UPS # 12	10	EL 40 Ah	Tubular	Exide	25
29	Microchip	Transformer		ECE	Annexure block	3	26 Ah	SMF	Amaron Quanta	8
30	Microchip	Transformer	SSN/C&H/UPS/00069	Cristal Growth (EEE SF)	Cristal Growth Lab new ups - Mr. Karupasamay UPS-11	15	EL 40 Ah	Tubular	Exide	20
31	Frontline	Transformer		EEE	APE Lab - EW - SF	10	42 Ah	SMF	Amaron Quanta	20
32	Microchip	Transformer	SSN/C&H/UPS/00071	Research	Research Lab - Aravind UPS # 10	10	EL 40 Ah	Tubular	Exide	20
33	Microchip		SSN/C&H/UPS/000106	Ladies Hostel - I	Ground Floor-WW	2	6 EL 40 Ah	Tubular	Exide	4

SI. NO	Make	Model	FAR #	Building	Location	Rating in KVA	Battery (12V) Specification	Battery Model	Battery Company	No of Batteries Qty
34	Frontline	Transformer		Cristal Growth (EEE SF)	Research Classroom -NP Rajesh	10	EL 40 Ah	Tubular	Exide	20
35	Microchip			Ladies Hostel - V A	First Floor	3	26 Ah	SMF	Amaron Quanta	8
36				Innovation Centre	Innovation	3	42 Ah	SMF	Exide	8
37	Foredot	Transformer		Biomedical	Biomedical 3rd Floor (EW) N.P.Rajesh	10	42Ah	SMF	Amaron Quanta	20
38	Frontline			Humanities Block	Staff room & Classroom	20	40 Ah	Tubular	Exide	20
39	Frontline			ECE	DSP Lab	10	40 Ah	Tubular	Exide	20
40	Frontline			Mechanical	CAD Lab	15	40 Ah	Tubular	Exide	20
41	Numeric	Digital2000+	SSN/C&H/UPS/00015	Mechanical	Dynamics Lab	2				
42	Frontline			Mechanical	Workshop (netswitch)	1	40 Ah	Tubular	Exide	3
43	Frontline	Transformer	SSN/C&H/UPS/0002	Bio-Medical	Instrumentation Lab - GF - LS07	30	65 Ah	SMF	Amaron Quanta	20
44	Luminous			Ladies Hostel - VI	First Floor	2	26 Ah	SMF	Amaron Quanta	6
45	Frontline			Chemical Engg	Sophisticated Instrumentation Lab	10	6 EL 40 Ah	Tubular	Exide	20
46	Frontline			Chemical - 3rd Floor	Exam Cell - Storeroom	3	6 EL 40 Ah	Tubular	Exide	8

SI. NO	Make	Model	FAR #	Building	Location	Rating in KVA	Battery (12V) Specification	Battery Model	Battery Company	No of Batteries Qty
47	Microchip			Mechanical	Mechanical - Dean Room Side	3	65 Ah	SMF	Amaron Quanta	8
48	Frontline			Chemical - Ground Floor	Crystal Growth - Research Lab - Mr. Govindaraj - XRD Lab	15				30
49	Frontline	Transformer		Mechanical	Mechatronics Lab	10	42 Ah	SMF	Amaron Quanta	20
50	Frontline		SSN/C&H/UPS/00036	MBA	UPS Room - GF - Main Lab	20	6 EL 75 Ah	Tubular	Exide	20
51	Microchip	Transformer		MBA	UPS Room - GF - All Staff Room	10	40 Ah	Tubular	Exide	20
52				MSIT	IBM Server - Stand by		26 Ah	SMF	Exide	16
53	Microchip	Transformer		Civil Engg	All Staff - RC 33	3	6 EL 40 Ah	Tubular	Exide	8
54	Frontline		SSN/C&H/UPS/00083	Civil Engg	Civil Computer CAD Lab - RC 34	10	6 EL 40 Ah	Tubular	Exide	20
55	Frontline			Gents Hostel - I	BH I (EW)	1	6 EL 40 Ah	Tubular	Exide	3
56	Microchip			Gents Hostel - II	GH - II - Ground Floor	3	75aH	Tubular	Exide	3
57	Frontline			MSIT	Lab & Staff	10	42 Ah	SMF	Amaron Quanta	20
58				Gents Hostel - III	GH - III (Left wing) - Ground Floor	2	6 EL 40 Ah	Tubular	Exide	8
59	Frontline			Gents Hostel - IV	GH - IV EW & WW - Ground Floor	2	42Ah	SMF	Amaron Quanta	8

SI. NO	Make	Model	FAR #	Building	Location	Rating in KVA	Battery (12V) Specification	Battery Model	Battery Company	No of Batteries Qty
60	Microchip	Transformer		Mechanical	IIPC Lab	2	26 Ah	SMF	Exide	4
61	Microchip		SSN/C&H/UPS/00115	Gents Hostel - V	BH V - Ground Floor	2	6 EL 40 Ah	Tubular	Exide	4
62	Foredot			PHYSICS Department	Staff Room	10	42 Ah	SMF	Amaron Quanta	20
63	Frontline		14011160347	Gents Hostel - VI	GH - VI A Block & B,C,D - Ground Floor	3	6 EL 65 Ah	Tubular	Exide	9
64	Frontline		SSN/C&H/UPS/00103	Placement - CDC	Placement -2nd Floor	20	65Ah	SMF	Amaron Quanta	20
65	Microchip			International Hostel	IGH -EW , WW, BH-VII	2	42 Ah	SMF-Powersafe	Exide	4
66	Frontline			Ladies Hostel - III	Ground Floor	1	6 EL 40 Ah	Tubular	Exide	3
67	Frontline		SSN/C&H/UPS/00064	Research	Research Lab - Hi - frequency (stand by) - Balaji UPS # 16	6	65 Ah	SMF	Amaron Quanta	20
68	Frontline			Ladies Hostel - II	Ground Floor	1	6 EL 40 Ah	Tubular	Exide	3
69	Numeric	Digital 2000+	SSN/C&H/UPS/00088	Ladies Hostel - IV	Ground Floor	2	Build in for Server Rack			
70	Frontline			Ladies Hostel - V	Ground Floor	3	EL 40 Ah	Tubular	Excel	9
71	Foredot	Transformer	FDSSSNUPS001	Research	Dr. Anand babu - Project UPS # 14	20	EL 60 Ah	Tubular	Exide	30
72	Foredot			Research Lab RC28	Aravindan Lab UPS -6	10	42 Ah	SMF	Amaron Quanta	20

SI. NO	Make	Model	FAR #	Building	Location	Rating in KVA	Battery (12V) Specification	Battery Model	Battery Company	No of Batteries Qty
73	Frontline	Hi-Frequency - S Model		Guest House	Guest House	1	6 EL 40 Ah	Tubular	Exide	3
74				Main Auditorium	Auditorium	2				
75	Luminous		SSN/C&H/UPS/000106	Primary substation	PSS	2	6 EL 40 Ah	Tubular	Exide	6
76	Frontline			SSN Crest - FF	Dr. N.P. Rajesh	20	42 Ah	SMF	Amaron Quanta	30
77	Numeric	High Frequency	N8332190350012 3	Mechanical	Cad Lab- Designing Printer	3	42 Ah	SMF	Amaron Quanta	6
78	Foredot	Transformer		Chemical	Computational lab, All staff-FF, SF	15	65Ah	SMF	Amaron Quanta	20
79	Frontline	Transformer	SSN/C&H/UPS/000080	Cristal Growth (EEE SF)	Cristal Growth Lab UPS-1	10	65 Ah	SMF	Amaron Quanta	20
80	Frontline	Hi-Frequency		CSE	Windows Programming Lab - CSE -FF UPS Room Hi-frequency	10	40 Ah	Tubular	Exide	20
81	LibertNXC	NXC SERIES	201411NC0109	CSE ANNEX	First Floor CSE Annex - OS Lab & Hardware Lab - Moorthy, System programming lab-Sabari, PG LAB II-suresh, PG LAB III-Sabari	40	65 Ah	SMF	Amaron Quanta	32
82	EATON	93E Transformer	DN113LXX01	Data Centre	Data Centre - First Floor	30	42 Ah	SMF	Amaron Quanta	30
83	EATON	93E Transformer	DN113LXX02	Data Centre	Data Centre - First Floor	30	42 Ah	SMF	Amaron Quanta	30

SI. NO	Make	Model	FAR #	Building	Location	Rating in KVA	Battery (12V) Specification	Battery Model	Battery Company	No of Batteries Qty
84	Rellio	Transformer - MHT 160	1804PMHT0000920	Research - GF-EEE	Solar Power - Shanmugavel	160	200 Ah	SMF	Amaron Quanta	40
85	Delta	Transformer	Z2T21300008RO	CSE Dept	GF, FF all Labs and Staff rooms	40	60Ah	Tubular	Exide	40
86	Delta	Transformer	Z2T21300009RO	IT Dept	GF, FF all Labs and Staff rooms	40	60Ah	Tubular	Exide	40
87	Delta	Transformer	Z2T21300009RO	ECE	FF all Labs and Staff rooms	20	26Ah	SMF	Exide	50
88	EATON	Transformer 93E	DG506LXX03	EEE-RC	2nd Floor	100	100Ah	Tubular	Exide	40
89	Delta	Transformer		SNU-GF	GF, FF all Labs and Staff rooms	40	60Ah	Tubular	Exide	40
90	Delta	Transformer		SNU-FF	FF all Labs and Staff rooms	20	26Ah	SMF	Exide	50
					Total Ratting (KVA)	**1189**			**Total Battery Qty**	**1543**

4.5.1. Observation and Comment

Hereby we observed that installation of UPS system in campus mainly for supporting the Systems used in lab and Instruments in labs during electricity shutdown.

In campus first stage of installation are Tubular types Batteries and then it was replaced with SMF type batteries. Sealed Maintenance Free battery is completely sealed and does not require addition of water.

The electrolyte utilized is a part of the type of gel that fills in the plates of batteries. SMF batteries are durable and deliver the rated performance. These batteries are used as a part of UPS and Inverter. Its life can be extended to 3-5 years without required maintenance.

Tubular type Batteries. Over SMF type batteries recommendations to use future installation the Inbuilt Lithium battery Inverter which are able to be recharged hundreds of times and are more stable.

They tend to have a higher energy density, voltage capacity and lower self-discharge rate than other rechargeable batteries. This makes for better power efficiency as a single cell has longer charge retention than other battery types.

It is Zero maintenance with battery C1 category which has more than 10 years life of battery charging faster than lead acid battery and also maintenance free. Advantages of this lithium battery is zero maintenance fast charging in 5hours.

4.6. PUMPING SYSTEM

There are pumps installed at various location in the College for pumping water for hostels, kitchen, administrative building, washrooms etc

PUMPING SYSTEM

Figure 14: Pumping system in the campus

4.6.1. Observation and Comments

The sources of water for the institution are 12 wells located at varying distances. Water from these wells is pumped to the underground sump of capacity 1.25Lakh Liters based on the needs with 5HP, 10HP pumps. From here the water is pumped into the overhead tank using two pumps of 10HP and two pumps of 15HP each. Three shifts of pumping are done where in each shift a round of 3 times the water shall be pumped when fully operative. Approximately, 10L liters of water demand have been recorded so far by the institution.

4.7. DG SETS

DG sets are used in the college to supplement power when there is load shedding, or when there is a peak in demand and the input is not able to match the requirement.

Table 15:Details of DG sets in the college is tabulated below

DG NO	Location	Voltage Measured	Current Measured	Generator Rating (in kVA)	Power Factor	Hours of usage	KWH
DG 1	SS 1	415	189	500	0.96	2	**960**
DG 2	SS 1	412	168	320	0.98	2	**627.2**
DG 3	SS 1	412	400	500	0.97	2	**970**
DG 4	SS 2	415	175	250	0.98	2	**490**
DG 5	SS 2	415	225	500	0.96	2	**960**
DG 6	MAIN AUDI	412	120	200	0.98	2	**392**
DG 7	MAIN AUDI			125	0.98	2	**245**
DG 8	SSN RC	415	120	250	0.98	2	**490**

DG SET

Figure 15: DG sets in the campus

4.7.1. Observation and Comments

The DG set on an average is used for 2 hrs a day. The DG set is run using Diesel. The institution has nearly 8 DG sets and is used to supplement the power purchased from TN Electricity Board when there is power shortage or overload. The unit of power was used by the institution during the period Dec 2020 to Dec 2021 is highly variable. In some months the consumption was less but was much higher in other months, on an average 3207KWH of power was produced by DG during the period Dec 2020 to Dec 2021. The highest power generated by DG set was in the month of Nov 2021 which was 12,544 KWH. The same is depicted in the graph below.

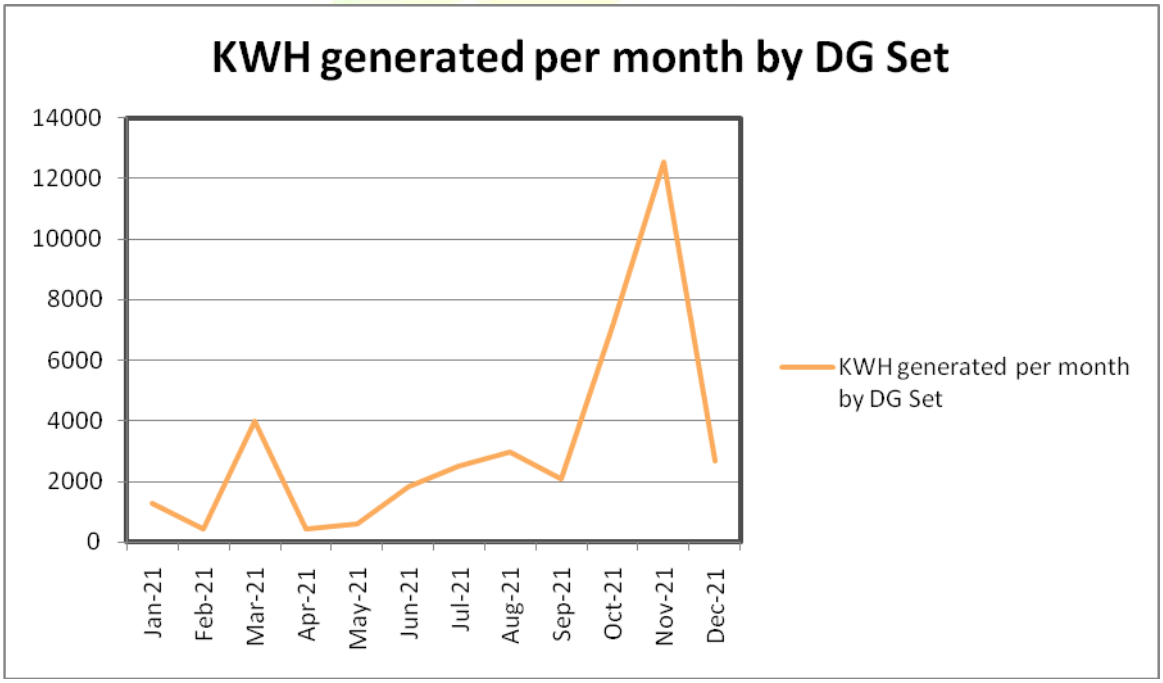

Figure 16: Power Generated by the DG Set

In Sub-Station I, three generators of capacities 500+500+300KV are present, where it consumes about 80L of diesel when it produces 400-500A current. Transformer capacity here is 630KV. In Sub-Station II, two generators of capacities 500+250KV are present. Two generators of 200+125KV are present at auditorium. On an average, 2000L of diesel is used in a month.

4.8. TRANSFORMER

Two transformers are located in the Institution relaying the electricity catering to the need of the entire Institution.

Table 16: Transformer details of the campus

Transformer	LOCATION	Transformer Rating (in kVA)
Transformer 1	SS 1	630
Transformer 2	SS 2	1000

TRANSFORMER

Figure 17: Transformer in the campus

4.9. SOLAR POWER SYSTEM

The institute has on-grid solar systems of mono crystalline micro-grid pattern. Currently 0.85mw capacity solar panels are installed in the institution. 13 Solar panels are placed on the rooftop of various building/ blocs. Each system produces 325 watts. Total of 0.850MW can be generated by these 13 solar power systems together.

The solar power systems were installed in 2018 on 2 phases. During 1st phase 600KW was installed and in the 2nd phase 250KW was installed. 100KW panels are set over two buildings and the rest are laid with 50KW solar panels.

But depending on the weather conditions, there is a variation in the solar output every month. The solar output generated by the all these panels together in various months are depicted below.

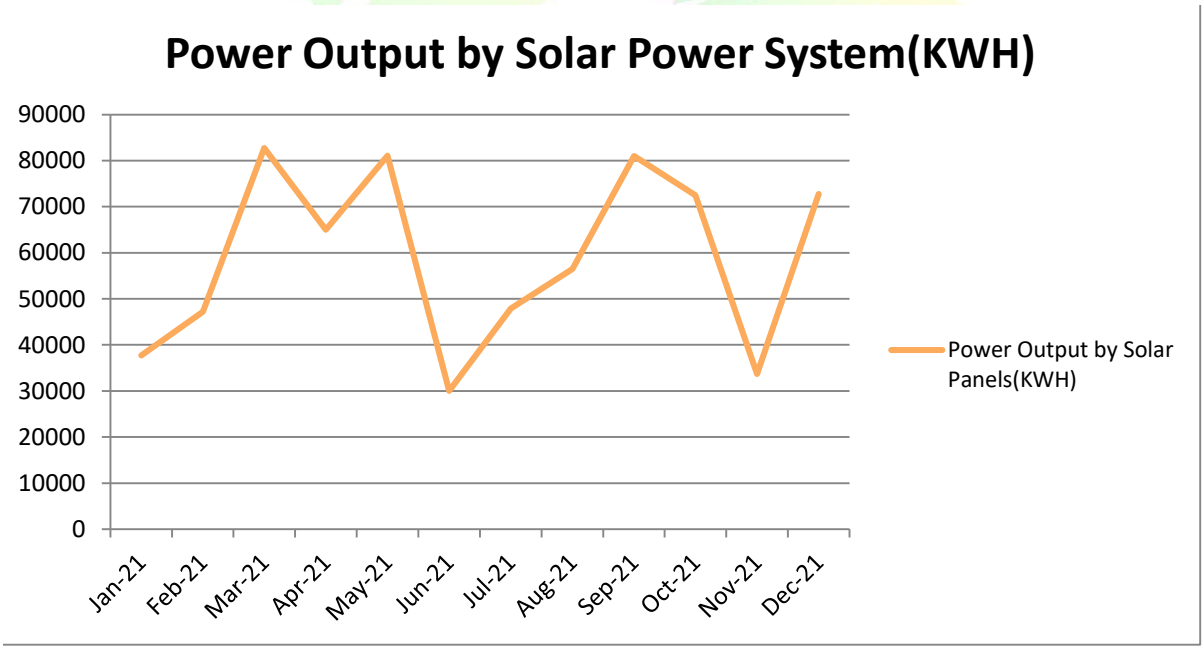

Figure 18: Power generated by solar power system

The solar power systems on an average generated 59,013KWH per month. During the period Dec20-Dec 21, a total of 7,08,161 KWH of power was produced by the solar electricity generation system installed across the campus. The power generated by the solar power system is directly given to the transformer to meet the electricity demand of the college. So the power requirement of the institution is met from three sources mainly electricity purchased from TANGEDCO, power generated from solar power systems and power generated by the DG set.

The installation of solar power systems to generate power to supplement the electricity purchased from TANGEDCO is a very good initiative taken by the institution. It can be considered as the huge step towards a greener, cleaner campus that depends on sustainable source of energy.

The institution has received a sanction for installing solar panels for generating 500KW more unit of power. This will lead to reduction in the Electricity bill of the Institution as well as take the institution further towards the path of sustainable growth.

Table 17: Details of Solar panels

SI.NO.	Name of Building	Details of Solar panel installed			
		Make	Watt/ panel	No of panels	Total installed generation
1	ECE BLOCK	VIKROM SOLAR	325	462	150KW
2	CSE BLOCK	VIKROM SOLAR	325	154	50kw
3	IT BLOCK	VIKROM SOLAR	325	154	50kw
4	CSE ANNEX BLOCK	VIKROM SOLAR	325	306	100kw
8	CDC BLOCK	VIKROM SOLAR	325	154	50kw
9	SOM BLOCK	HHV	325	288	100kw
10	BME BLOCK	HHV	325	154	50kw
11	CHEMICAL BLOCK	HHV	325	308	100KW
12	EEE EAST WING	HHV	325	308	100KW
13	HUMANITIES BLOCK	HHV	325	162	50KW
13	EEE WEST WING	HHV	325	154	50kw
SOLAR INVERTER SPECIFICATIONS		**ABB-TRIO MODEL**		**2604**	**850KW**

. This table shows the location of installation of solar power system across the institution. The institution has mainly used Vikram Solar and HHV solar which are able to generate 325 watts per panel. A total of 2604 panels has been installed across the institution. These 2604 panels together have installed capacity of 850KW. The electrical specification of HHV solar and Vikram solar panels is given below.

Table 18: Electrical Characteristics of HHV Solar

Rated power	Pm	W	305	310	315	320
Open circuit voltage	Voc	V	40.06	40.25	40.52	40.52
Maximum power voltage	Vmp	V	32.67	33.05	33.1	33.2
Short circuit current	Isc	A	9.83	9.9	10.08	10.16
Maximum power current	Imp	A	9.34	9.38	9.52	9.64
Module efficiency	h	%	18.72-19.02	19.03-19.34	19.35-19.64	19.65-19.94
Power tolerance	**W**				**0 / 4.99**	

Salient Features

- BIS Certified (IS 14286 & IS/IEC 61730–1 & 2)
- Salt Mist Resistance; Certified for Severity 6
- Ammonia Resistance (IEC 62716)
- 1500VDC (IEC, UL) / 1000VDC (IEC, BIS)
- PID resistant (3 times of IEC Criteria)
- Micro-crack free
- Multi stage 100% in-line EL passed
- Higher energy yield on field performance
- More than 25 in-house quality checks
- Positive tolerance up to +5W
- Best in class material for true 25 years life
- IEC-61215 & 61730 (2016), UL-61215 & 61730 (2017)
- IEC 60701, IEC 62804, IEC 62716 Certified

Construction

Cell / Matrix	60; Mono Crystalline;
Dimension	1650 x 987 x 40 mm
Weight	17.50 kg
Glass	ARC; Low Iron; Tempered; High Light Transmission; 3.2mm
Junction Box	IP68; Potted
Cable	4mm² (12 AWG) ;1000±50mm length
Connector	TL - CABLE01S; MC4 Compatible
Diode	Schottky Bypass Diodes; 3 Nos
Frame	18u Anodized, aluminium alloy; twin wall profile

Somera Solar-Vikram Solar

Power Output Watt	435-465
Maximum Efficiency %	20.91
Positive Power Tolerance Wp	0~+4.99
Cells (Half Cut)	M6 144

Salient Features

- Somera Solar Series 6 of Vikram solar is Monocrystalline Solar PV Modules, Monofacial, MBB, M6 Half-Cell, SOMERA VSMH.72.AAA.05.
- Cylindrical Tabbing Wire is used to reduce the shadow on cell active area
- Implementation of bypass diodes in split JB series-parallel connections enable the module
- to perform in Partial Shadow Conditions with respect to full-cell module
- Higher Number of Busbar makes the PV modules less prone to loss in efficiency and increase tolerance to micro cracks
- Field Reliability is improved due to multiple contact points on the cell which lowers the cell stress during module fabrication
- LCOE Is Cut Back by using M6 size solar cell with adding more power output than lower size cell module
- Lower Internal Resistance boosts module power helping to achieve minimal power loss with respect to previous variant modules

Electrical Data

Peak Power Pmax (Wp)	435	440	445	450	455	460	465
Maximum Voltage Vmpp (V)	41.4	41.5	41.5	41.6	41.6	41.7	41.8
Maximum Current Impp (A)	10.51	10.62	10.72	10.82	10.93	11.03	11.13
Open Circuit Voltage Voc (V)	48.7	48.8	48.9	49	49.1	49.2	49.3
Short Circuit Current Isc (A)	11.45	11.56	11.67	11.77	11.88	11.99	12.09
Module Efficiency η(%)	19.56	19.79	20.01	20.23	20.46	20.68	20.91

Mechanical Data

Length × Width × Height	2118 × 1050 × 35mm (83.38 × 41.33 × 1.38 inches)
Weight	23.5 Kg (51.81 lbs)
Junction Box	IP68, Split Junction Box with individual bypass diodes
Cable & Connectors#	200 mm (+ve terminal) and 300 mm (-ve terminal) length cables, MC4, Compatible/MC4 Connectors
Application Class	Class A (Safety class II)
Superstrate	3.2 mm (0.125 inches) high transmission low iron tempered glass, AR coated
Cells	72 Mono PERC (144 half-cells)
Back Sheet	Composite film
Frame	Anodized aluminium frame with twin wall profile
Mechanical Load Test	5400 Pa (Snow load), 2400 Pa (Wind load)
Maximum Series Fuse Rating	20 A

Solar Power Generated for The Past 3 Years

Solar power plant was installed in the month of august 2018.The solar power plant has capacity of 850KW.After implementation of solar power plant the campus has reduced the consumption of power from the TANGEDCO. Average monthly consumption from solar power in the year 2019 is 60733 KWH and in year 2020 is 41443 KWH (Due to lock down, campus is closed mostly).

A Comparison of Power Consumption by the Institution from TANGEDCO and Power generated from the Solar Panel installed in the institute is depicted below.

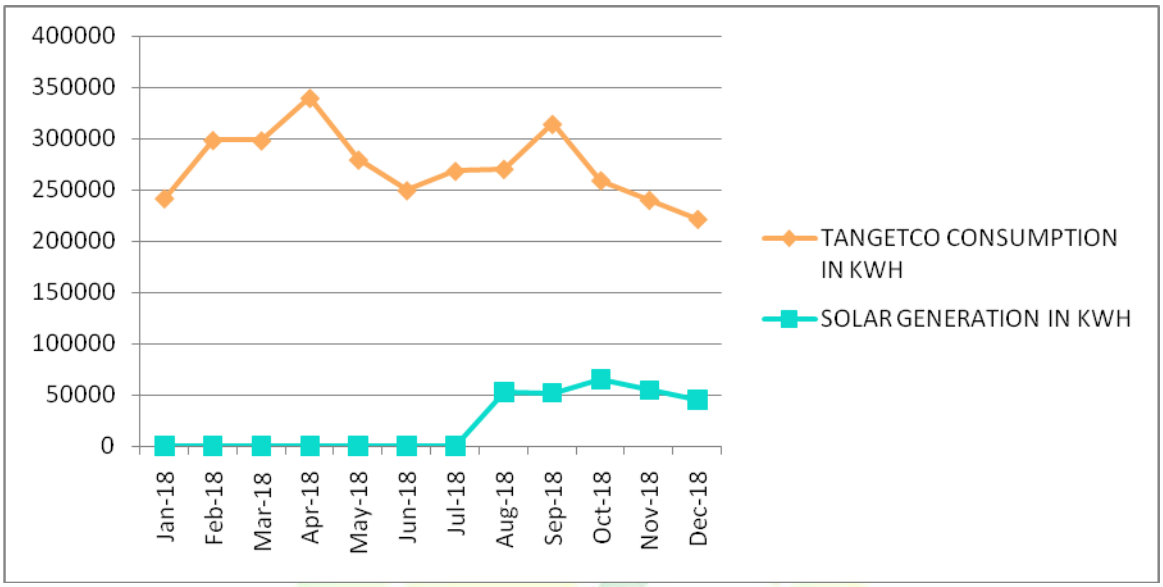

Figure 19: Comparison of Monthly Power Consumption from TANGEDCO and from solar power source (Jan 18-Dec18)

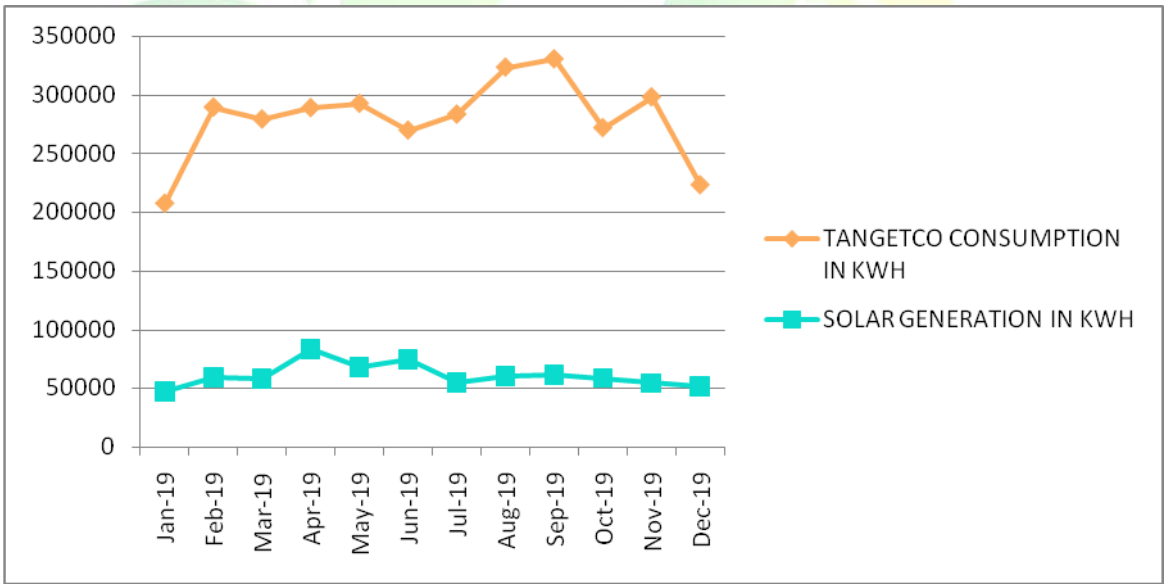

Figure 20: Comparison of Monthly Power Consumption from TANGEDCO and from solar power source (Jan 19-Dec19)

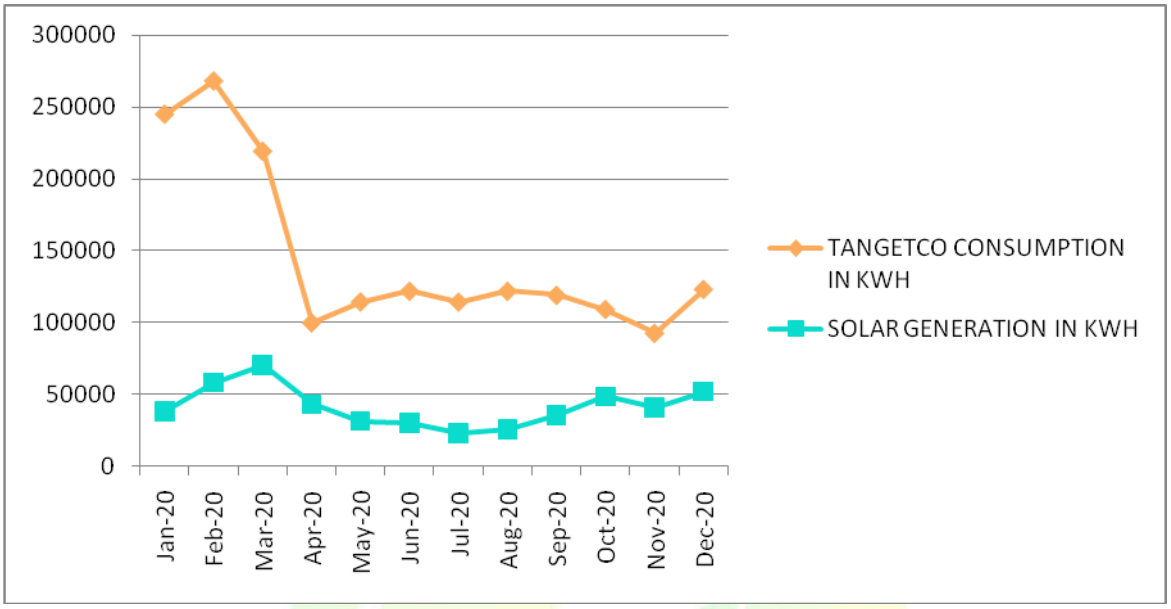

Figure 21: Comparison of Monthly Power Consumption from TANGEDCO and from solar power source (Jan 20-Dec20)

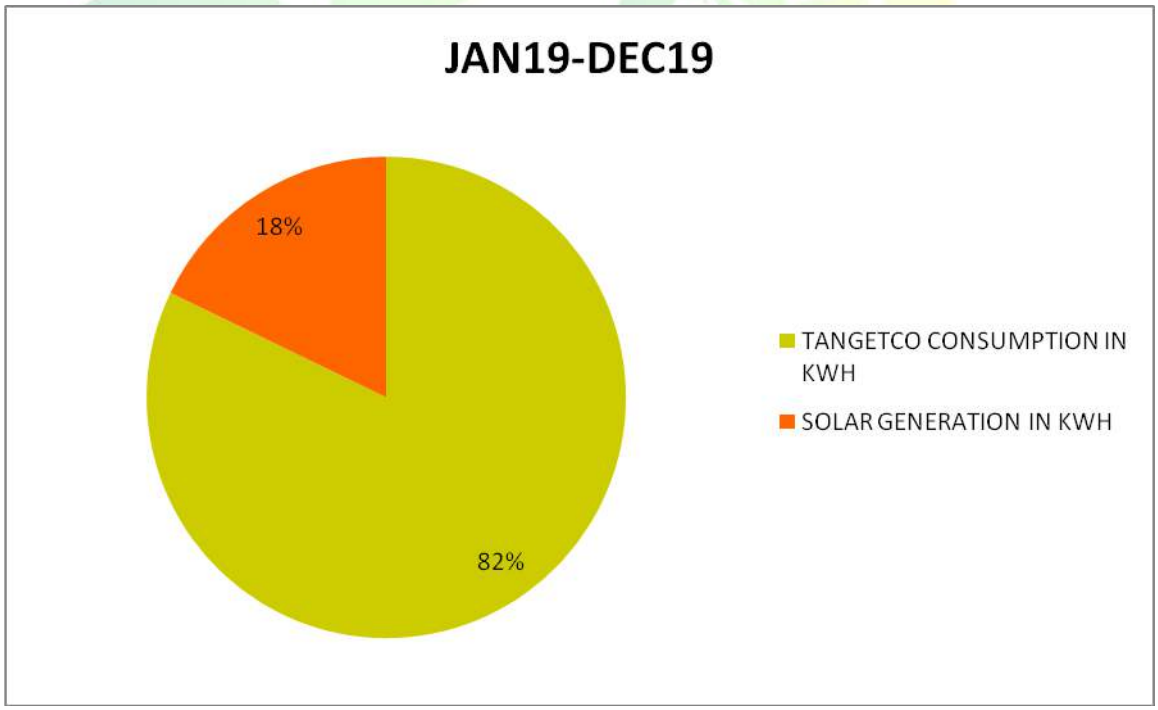

Figure 22: During the analysis it was found that the average monthly solar power generation in kWh for the year 2019 is 60733 KWH and this contributes 18% of the total power supply to the campus.

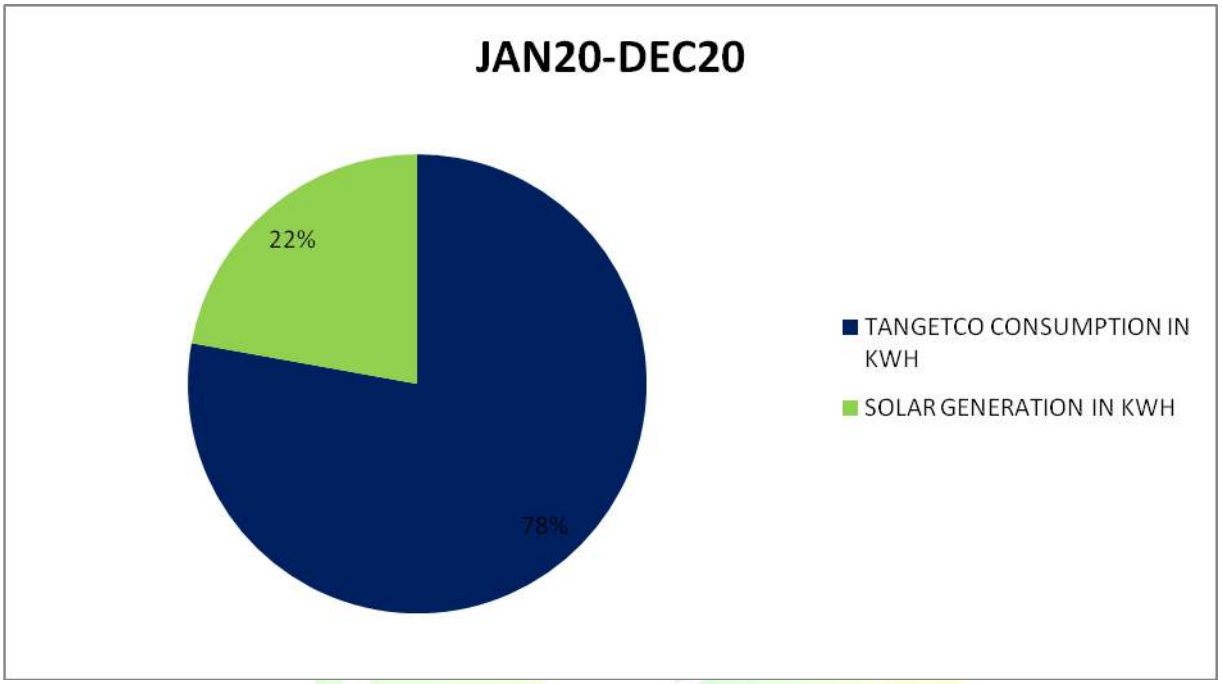

Figure 23: The average monthly solar power generation in kWh for the year 2020 is 41443 kWh and this contributes 22% of the total power supply to the campus.

There is future plan of implementing another 500KW Solar power plant in the campus which will contribute to 32 % of the power supply to the campus.

SOLAR PANELS

Figure 24: Solar panels in the campus

SOLAR HEATER

The solar heater implemented in the campus was V Guard Solar heater which has capacity of producing 500 L per day. During the audit it was found that nearly 88 nos. of 500L capacity of solar water heaters are present in the campus. The location of these heaters is given in the tabular column below.

Table 19: Details of solar heaters in the campus

HOSTEL BLOCK WISE SOLAR WATER HEATER DETAILS.				
SL NO	HOSTEL AND NO	LOCATION	HOTWATER TANK CAPACITY IN L	TOTAL PLANTS IN THIS HOSTEL
1	GENTS HOSTEL-1	EW-1	500	
		EW-2	500	
		WW-1	500	
		WW2	500	4-NOS
2	GENTS HOSTEL -2	EW-1	500	
		EW-2	500	
		WW-1	500	
		WW-2	500	4-NOS
3	GENTS HOSTEL -3	PLANT -1	500	
		PLANT-2	500	2-NOS
4	GENTS HOSTEL -4	CW-1	500	
		CW-2	500	
		CW-3	500	
		CW-4	500	
		SW-1	500	
		NW-1	500	6 -NOS
4	GENTS HOSTEL -5	SE-1	500	
		SE-2	500	
		SE-3	500	
		NE-1	500	
		NE-2	500	
		NE-3	500	
		SW-1	500	
		SW-2	500	
		SW-3	500	
		NW-1	500	
		NW-2	500	
		NW-3	500	12 nos
5	GENTS HOSTEL - 6	NW-1	500	

HOSTEL BLOCK WISE SOLAR WATER HEATER DETAILS.				
SL NO	HOSTEL AND NO	LOCATION	HOTWATER TANK CAPACITY IN L	TOTAL PLANTS IN THIS HOSTEL
		NW-2	500	
		NW-3	500	
		NW-4	500	
		SW-1	500	
		SW-2	500	
		SW-3	500	
		SW-4	500	
		SE-1	500	
		SE-2	500	
		SE-3	500	
		SE-4	500	
		NE-1	500	
		NE-2	500	14 nos.
7	GENTS HOSTEL -7	EAST-1	500	
		EAST-2	500	
		EAST-3	500	
		WEST-1	500	
		WEST-2	500	
		WEST-3	500	6.nos
8	GENTS HOSTEL -8			
		SE-1	500	
		NE-1	500	
		NE-2	500	
		SW-1	500	
		SW-2	500	5 nos.
9	LADIES HOSTEL -1			
		EW-1	500	
		EW-2	500	
		WW-1	500	
		WW-2	500	4-NOS
10	LADIES HOSTEL -2			
		PLANT-1	500	
		PLANT -2	500	2-NOS
11	LADIEA HOSTEL -3			
		PLANT-1	500	
		PLANT-2	500	
		PLANT-3	500	3-NOS

HOSTEL BLOCK WISE SOLAR WATER HEATER DETAILS.				
SL NO	HOSTEL AND NO	LOCATION	HOTWATER TANK CAPACITY IN L	TOTAL PLANTS IN THIS HOSTEL
12	LADIES HOSTEL -4	EW.1	500	
		EW.2	500	
		EW.3	500	
		WW.1	500	
		WW.2	500	
		WW.3	500	6NOS
13	LADIES HOSTEL - 5A	PLANT-1	500	
		PLANT-2	500	
		PLANT-3	500	3-NOS
14	LADIES HOSTEL - 5B			
		MW.-1	500	
		MW.-2	500	
		MW.-3	500	
		NE.-1	500	
		NE.-2	500	
		SE.-`1	500	
		SE.-2	500	
		SW.. -1	500	
				8-NOS
15	LADIES HOSTEL - 6	NE.1	500	
		NE 2	500	
		SE 1	500	
		SE2	500	
		SW1	500	
		SW2	500	
		NW1	500	
		NW2	500	8 nos
16	GUEST HOUSE	plant 1	500	1 no
PLANTS TOTAL				**88**
44000 LITERS PER DAY HOT WATER CAPACITY				

The solar heater installed in the campus is V Guard Solar heater and it has the following features.

- Generates hot water without electricity or any other fuel
- Negligible scaling of tube
- Storage tank is made of food Grade SS304L with Aluminium Stucco cladding. High quality PUF insulation minimizes the heat loss of water inside the tank
- Efficient performance in winter and partially cloudy days
- Compact size, low height, lightweight. Easy to install and transport
- Huge saving on electricity and fuel charges
- Type of Thermal Insulation - Polyurethane Foam (PUF)
- Absorber coating – Al N-SS-Cu coating
- Inner tank material - Stainless steel 304L
- High quality vacuum tubes to minimize heat loss
- Fitted with Sacrificial Anode
- Greater absorption area, auto sun tracking due to circular shape of vacuum tubes

The installation of solar heaters is a commendable step taken by the SSN College as huge amount of power loss generally happen during the use water heaters especially in the hostels. As the students generally tend to forget to switch off the heater after use or they even tend to switch it on for a very long time leading to power wastage.

The solar power heater tends to solve this issue as the heaters are run purely based on solar power so even if students tends to leave the heaters on for very long only the power generated using the solar heater is being used, which is of renewable type and do not put load on the overall electricity consumption of the institution.

SOLAR HEATER

Figure 25: Solar heaters in the campus

4.10. ELECTRICITY BILL ANALYSIS

One year's data has been represented in the graph given below.

Table 20: Electricity bills for one year (Dec2020-21)

Sl.NO.	MONTH	TANGEDCO CONSUMPTION-KWH	TANGEDCO PER MONTH COST-RS
1	Dec 20	92,466	10,55,767
2	Jan 21	1,22,991	12,48,231
3	Feb 21	1,46,651	14,04,857
4	March 21	1,85,199	16,63,062
5	April 21	1,24,799	12,57,755
6	May 21	1,08,737	11,49,612
7	June 21	1,04,724	11,22,838
8	July 21	1,28,871	12,87,075
9	Aug 21	1,32,735	13,12,699
10	Sep 21	2,05,517	18,04,708
11	Oct 21	2,23,915	19,26,205
12	Nov 21	1,96,157	17,39,683
13	Dec 21	2,45,391	20,70,520

Monthly average consumption of electricity by the Institution from TANGEDCO is 1,60,473 KWH. Rest of the power requirement by the Institute is met from power produced from the Solar power supply installed in the college, and the power generated by the DG set.

The detailed analysis of total electricity consumption for the entire institution is given in the section below.

4.10.1. Total Electricity Consumption by The Institution Analysis

The power required by the institution is met from three sources namely power purchased from TANGEDCO, power generated from Solar power systems, and the power generated by the DG set. The consumption from all the three sources is tabulated below.

Table 21: Monthly Analysis of Power Consumption by the Institution

Sl.NO.	MONTH	TANGEDCO Consumption-KWH	Solar Power Generation-KWH	DG Generation-KWH	Total Power Consumption KWH
1	Jan-21	1,22,991	37,727	1265	1,61,983
2	Feb-21	1,46,651	47207	438	1,94,296
3	Mar-21	1,85,199	82,763	3983	2,71,945
4	Apr-21	1,24,799	65004	446	1,90,249
5	May-21	1,08,737	81059	587	1,90,383
6	Jun-21	1,04,724	30032	1848	1,36,604
7	Jul-21	1,28,871	47930	2502	1,79,303
8	Aug-21	1,32,735	56468	2974	1,92,177
9	Sep-21	2,05,517	80991	2100	2,88,608
10	Oct-21	2,23,915	72494	7123	3,03,532
11	Nov-21	1,96,157	33728	12544	2,42,429
12	Dec-21	2,45,391	72,758	2679	3,20,828

So, the average per month consumption of electricity by the institute is 2,22,695 KWH. There is a variation in the power consumption by the institution during the period Jan21-Dec 21. The variation in power consumption from all the three sources are plotted below.

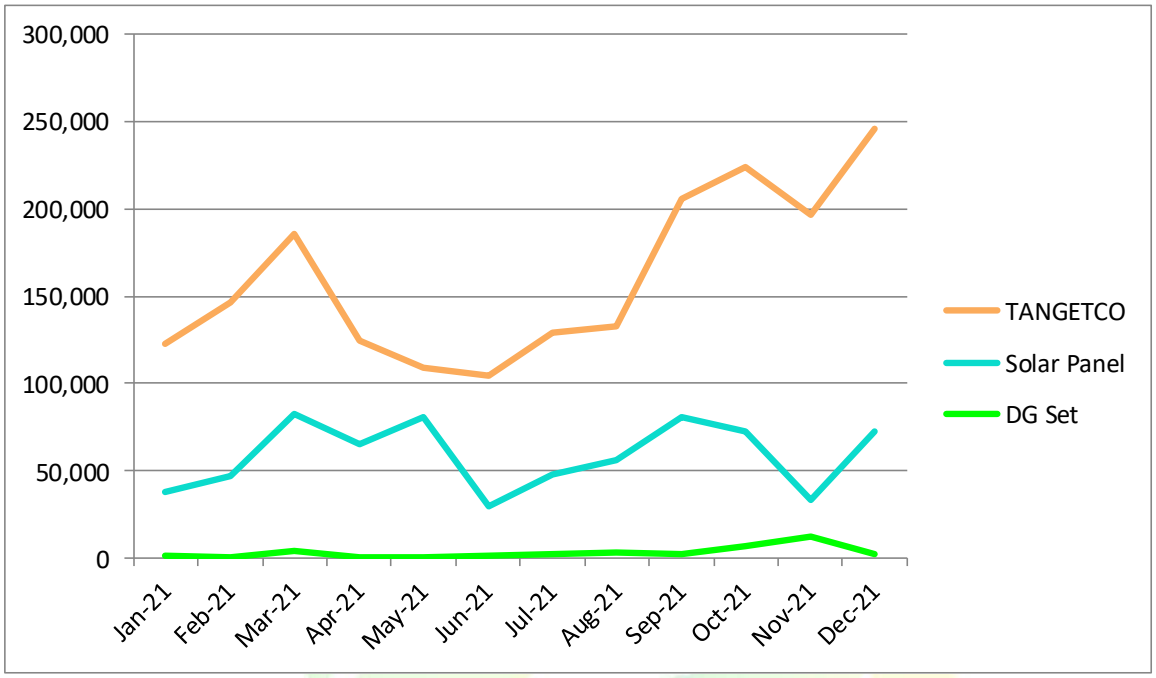

Figure 26: Variation in power consumption during the time period Jan21-Dec 21

The total power consumption by the Institution from all the three sources namely TANGEDCO, Solar power system and DG set is depicted below

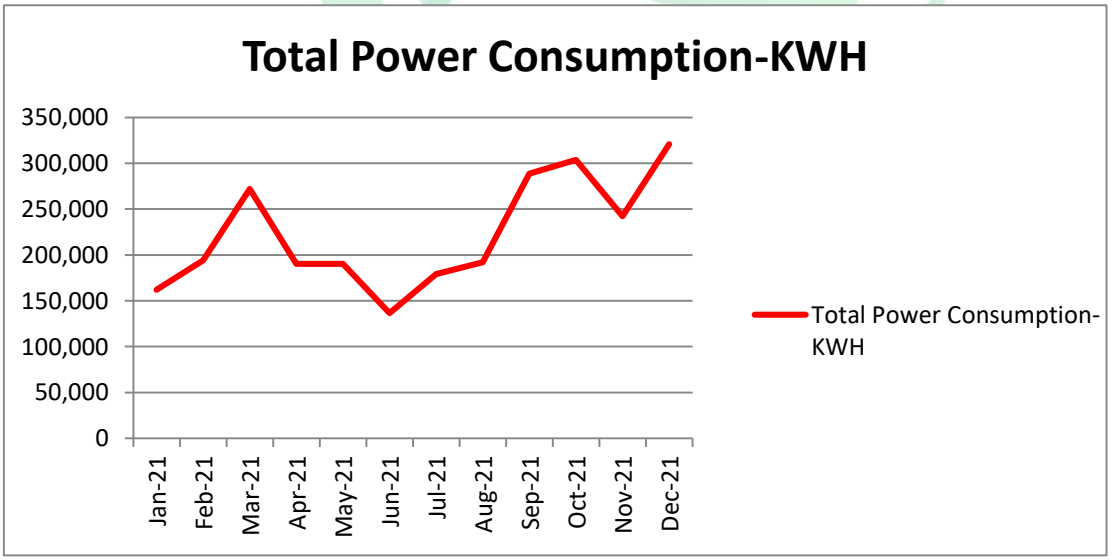

Figure 27: Total Power Consumption by the Institution from Jan21-Dec 21

4.10.2. Observation and Comments

During the analysis of data collected it was observed that during the month of June 21 the institution recorded the lowest power consumption. The highest power consumption was reported in the month of December. On further investigation it was found that in the month of December 21 the college became fully functional, and the college was only partly operational in other months on account of Covid-19. In the month of June, 2nd wave of Covid-19 was at the peak so the college was only partly operational with only the staffs attending the college based on the requirements put by the college. Due this the consumption was least in the month of June 2021.

The solar panels generated nearly 7,08,161 KWH during the period Jan2021-Dec 2021.The DG set generated total of 38,489 KWH during the period Jan 2021-Dec 2021. A total of 19,25,687 KWH was procured from TANGEDCO.

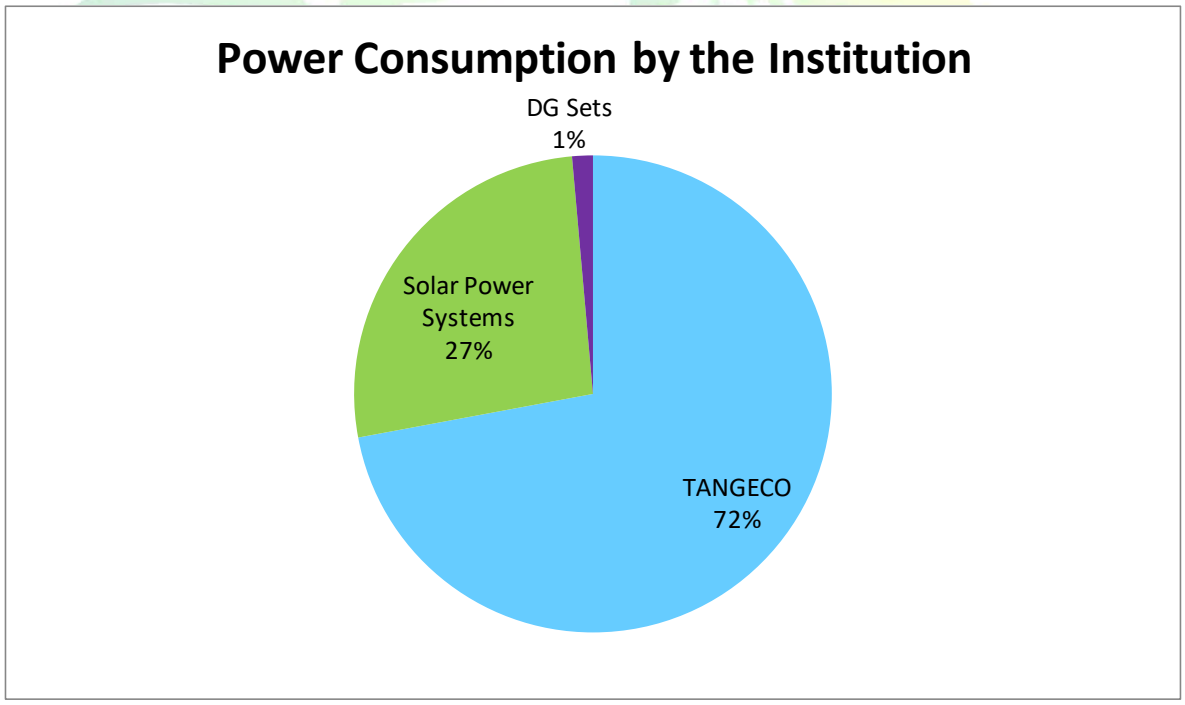

Figure 28: Percentage Power Consumption met by the Institution from all three sources

Based on analysis of the audit data collected, 72% of total power requirement of the institution was met from the electricity purchased from the TANGEDCO board.27 % of the power requirement of the institution was met from the power generated from the solar power systems.1% of the electricity requirement was met from the power generated using DG set. DG set was used only when there was a power shortage in the campus.

The entire power consumption during the period Jan2021-Dec2021 was 26,72,337 KWH. The average per unit electricity charge during Jan21-Dec 21 is 9.6 Rs/Unit. The average per unit cost for solar power generation is 9.01 Rs/Unit.

So, the Electricity bill during Dec2020-Dec 2021 was Rs18,486,595. By installation of solar power systems, the Institution was able to save Rs 67,98,345 which is a huge saving for an educational institution. The Institution will be able to drastically bring down the EB bill by the installation of the rest of the panels whose work is the pipeline and by other power saving strategy discussed in the following chapter.

UPS INSTALLED AT SSN

Figure 29: UPS's installed in the campus

SUB STATION AT SSN

Figure 30: Substation of the campus

STP IN THE CAMPUS

Figure 31: Sludge treatment plant (STP) in the campus

CHAPTER 5

Proposals for Energy Saving

5.1. LIGHTING SYSTEM

We observed that during energy audit and site visit, lighting luminaries had both conventional lighting system like tube light, CFL, T-5 fitting, T-28 fitting, LED. The Institution has nearly 2670 LED fittings, which is a power saver for the institution.

Based on the audit, we would like to suggest to replace the rest of remaining 6122 tube lights with LEDs as the tube light consumes more power than LED

It was observed that many lighting systems were not in working condition and as many got fused and damaged in the long run. So, it will be highly appreciable if these systems could be fixed and maintenance procedures to be followed regularly so that the lux level too can be corrected in every room.

It would be highly commendable, if the institution purchases all lighting system and electrical equipment as per star levelling program by Bureau of energy efficiency, as it will lead to huge amount of electricity saving.

It will be appreciable, if the institution could conduct regular Cleaning and maintenance of lighting fixtures in every 5-6 months to increase performance of Lighting and also improve their Lux level.

Energy Saving by Lighting System

Replacement 6122 nos. of 2*36 &1*36-Watt Conventional tube light, with energy efficient 22 W LED blub installed in different places in College.

Table 22: Energy Saving by Lighting System

Total no. of Approximate 2*36 &1*36-Watt Conventional tube light	**6122**
Total no of Replacement of 2*36 & 1*36-Watt incandescent Bulb Conventional tube light with capacity of 22-Watt LED Bulb	6122
Average daily running time for 2*36 &1*36-Watt Conventional tube light in a day	6
Total Energy Consumed by 6122no - 2*36 & 1*36Watt Conventional tube light in a day	1815.48kWh
Total Energy Consumed by 6122no -22-Watt LED Bulb 22-Watt LED Bulb	808kWh
Prospective Energy Savings in a day in kWh	1007.48kWh
Electricity bill due 6122no -2*36 &1*36-Watt Conventional tube light in a day, assuming per unit cost is 8.60Rs/unit	15613.128
Electricity bill due 6122no -22-Watt LED Bulb 22-Watt LED Bulb in a day, assuming per unit cost is 8.60Rs/unit	6948.8
Savings in Rupees per day	8,664.328

Rs 8,664.328 in terms of EB bill can be saved per day if 6122 nos. of 2*36&1*36Watt Conventional tube light are replaced with energy efficient 22 W LED blub and 1007.48 kWh can be saved in a day which will lead to substantial reduction in load exerted by the lighting system

5.2. FAN SYSTEM

It was observed that the Institution has 4733 fans in total with per rating ranging from 30 W to 70 Watts. There are 4454 no if ceiling fan with a power rating of 70 watts. The total load by fan system 54852kWh per month.

If the 4454 no of ceiling fan are replaced by BLDC fan then the Institution will be able to reduce the power consumed by fan system drastically. So, the it is suggested that the Institution replace the conventional ceiling fan with New Super energy efficient 5 star rated BLDC ceiling fan as per Star levelling program by Bureau of Energy Efficiency.

Energy Saving calculation and recommendation for the existing Conventional Ceiling fans with BLDC super energy efficient fan has been given below. It would be commendable if the, Fan maintenance procedures were followed regularly with regular Cleaning and maintenance of Fan at least in every 6 months to increase performance of Fan.

Table 23: Energy Saving by Fan System

Total no of Approximate 70 W Ceiling Fan	**4454**
Total no of Replacement of 70 W Ceiling Fan with capacity of 28 Watts BLDC Fan	4454
Average daily running time (in hrs) for 70 W Ceiling Fan in a day	6
Total Energy Consumed by 4454 no of 70 W Ceiling Fan in a day	1870kWh
Total Energy Consumed by 4454 no of 28 W BLDC Fan in a day	748kWh
Electricity bill due 4454 no of 70 W Ceiling Fan in a day, assuming per unit cost is 8.60Rs/unit	16082 Rs/day
Electricity bill due by 4454 no of 28 W BLDC Fan in a day, assuming per unit cost is 8.60Rs/unit	6435 Rs/day
Prospective Energy Savings in kWh in a day	1122kWh
Savings in Rupees per day (in terms of EB Bill)	9649 Rs/day

Rs 9649 in terms of EB bill can be saved per day if the 4454 no of 70 W Ceiling Fan are replaced with 28 W BLDC fan and 1122 kWh can be saved in a day which will lead to substantial reduction in load exerted by the fan system.

5.3. MOTION SENSOR FOR LIGHTING

Campus Corridors and toilets use more lights and these are potential areas for energy saving by installing motion sensors. As lights in corridors and toilets, might remain "ON" in day time also. Motion sensors can be used there to automatically switch on the light when there is any movement and switch off the light when there is no movement. This can reduce the total load in corridors and toilets.

Table 24: Summary of Light fittings in Common Area, Verandas, toilets, Stair Case

SI.NO.	Lights in Verandas, Toilets, Stair Case		
	Light fittings	Total No of fittings	Hours of Usage
1	TUBE LIGHT 1*36 watts	548	6
2	LED TUBE -1*18 W	524	6
3	LED 22 Watt	200	6
4	LED 11 Watt	217	6
5	2*11 W.CFL	365	6
6	T 5 FITTING -28 W	658	6

Table 25: Suggested energy saving option by using motion sensor light

Total no of light fittings in common area, toilets, Verandas, Stair Case	**2512**
Hours of usage	6
Average reduction in per day by use of motion sensors	2
Total Energy consumed by the lighting system in common area, toilets, Verandas, Stair Case in a day	374 kWh
Proposed Total Energy that will be consumed by the lighting system in common area, toilets, Verandas, Stair Case in a day after installation of motion sensors	249 kWh
Proposed Energy saving that can be achieved in a day, after installation of motion sensors	125 kWh
Savings in Rupees per day (in terms of EB Bill, assuming per unit cost is 8.60Rs/unit)	1075 Rs/day

So, by installation of motion sensors the average power consumption can be reduced by 125 KWH leading to reduction of 1075 Rs/day in terms of electricity bill.

By use of motion sensors that hours of usage can be brought down to just 4 hrs in total, as the lights needs not be 'ON' the entire night and will automatically get turned on as soon as it detects a motion. So, this arrangement will be sufficient to light the corridor, toilets and stair case at night.

5.4. AIR CONDITIONING SYSTEM

Most of air conditioning were Spilt AC type, 3 star rated AC are being installed in the Institute. The total 784 AC system installed across the institution puts a load of 127040 kWh per month.

We would like to suggest to replace all 3-star AC with 5-star AC as the Energy Efficiency of 3 star split AC is 3.50 and that of 5 star split AC is 4.5.

The power consumed by of 3-star 1.5 tonne split AC is 1408W and that of 5 star split AC is 1.5 split AC of 1.5 tonne is 1172 Watts.

So, with replacement of single 1.5 tonne 3 star split AC with 5-star 1.5 tonne split AC, 236 Watts could be saved.

Also, with the installation of energy saver device, approximately 25 % electricity saving can be achieved.

It would be appreciable if the Institution take adequate steps for maintaining air conditioning set temperature above 24 Degree Celsius as per Bureau of Energy Efficiency.

Also, the institution needs to follow the Air condition maintenance procedures regularly, once in every 3 months, as it will enhance the performance of AC.

CHAPTER 6

GENERAL TIPS FOR ENERGY CONSERVATION

6.1. ELECTRICITY

- Schedule your operations to maintain a high load factor
- Minimize maximum demand by tripping loads through a demand controller
- Use standby electric generation equipment for on-peak high load periods.
- Correct power factor to at least 0.99 under rated load conditions.
- Set transformer taps to optimum settings.
- Shut off unnecessary computers, printers, and copiers at night.

6.2. MOTORS

- Properly size to the load for optimum efficiency. (High efficiency motors offer of 4 - 5% higher efficiency than standard motors)
- Check alignment.
- Provide proper ventilation (For every 10°C increase in motor operating temperature over recommended peak, the motor life is estimated to be halved)
- Check for under-voltage and over-voltage conditions.
- Balance the three-phase power supply. (An Imbalanced voltage can reduce 3 - 5% in motor input power)
- Demand efficiency restoration after motor rewinding

6.3. PUMPS

- Operate pumping near best efficiency point.
- Modify pumping to minimize throttling.
- Adept to wide load variation with variable speed drives or sequenced control of smaller units.
- Stop running both pumps -- add an auto-start for an on-line spare or add a booster pump in the problem area.

- Use booster pumps for small loads requiring higher pressures.

- Increase fluid temperature differentials to reduce pumping rates.
- Repair seals and packing to minimize water waste.
- Balance the system to minimize flows and reduce pump power requirements.

- Use siphon effect to advantage: don't waste pumping head with a free-fall (gravity) return.

6.4. LIGHTING

- Reduce excessive illumination levels to standard levels using switching; delamping, etc. (Know the electrical effects before doing delamping.)
- Aggressively control lighting with clock timers, delay timers, photocells, and/or occupancy sensors.
- Install efficient alternatives to incandescent lighting, mercury vapor lighting, etc. Efficiency (lumens/watt) of various technologies range from best to worst approximately as follows: low pressure sodium, high-pressure sodium, metal halide, fluorescent, mercury vapor, incandescent.
- Select ballasts and lamps carefully with high power factor and long-term efficiency in mind.
- Upgrade obsolete fluorescent systems to Compact fluorescents and electronic ballasts
- Consider lowering the fixtures to enable using less of them.
- Consider day lighting, skylights, etc.
- Consider painting the walls a lighter color and using less lighting fixtures or lower wattages.
- Use task lighting and reduce background illumination.
- Re-evaluate exterior lighting strategy, type, and control. Control it aggressively.
- Change exit signs from incandescent to LED.

6.5. DG SETS

- Optimize loading
- Use waste heat to generate steam/hot water /power an absorption chiller or preheat process or utility feeds.
- Use jacket and head cooling water for process needs Clean air filters regularly
- Insulate exhaust pipes to reduce DG set room temperatures
- Use cheaper heavy fuel oil for capacities more than 1MW

6.6. BUILDINGS

- Seal exterior cracks/openings/gaps with caulk, gasketing, weather stripping, etc.
- Consider new thermal doors, thermal windows, roofing insulation, etc.
- Install windbreaks near exterior doors.
- Replace single-pane glass with insulating glass.
- Consider covering some window and skylight areas with insulated wall panels inside the building.
- If visibility is not required but light is required, consider replacing exterior windows with insulated glass block.
- Consider tinted glass, reflective glass, coatings, awnings, overhangs, draperies, blinds, and shades for sunlit exterior windows.
- Use landscaping to advantage.
- Add vestibules or revolving doors to primary exterior personnel doors.
- Consider automatic doors, air curtains, strip doors, etc. at high-traffic passages between conditioned and non-conditioned spaces. Use self-closing doors if possible.
- Use intermediate doors in stairways and vertical passages to minimize building stack effect.
- Use dock seals at shipping and receiving doors.
- Bring cleaning personnel in during the working day or as soon after as possible to minimize lighting and HVAC costs.

6.7. WATER AND WASTE WATER

- Recycle water, particularly for uses with less-critical quality requirements.
- Recycle water, especially if sewer costs are based on water consumption.
- Balance closed systems to minimize flows and reduce pump power requirements.
- Eliminate once-through cooling with water.
- Use the least expensive type of water that will satisfy the requirement.
- Fix water leaks.
- Test for underground water leaks. (It's easy to do over a holiday shutdown.)
- Check water overflow pipes for proper operating level.

6.8. MISCELLANEOUS:

- Meter any unmetered utilities. Know what is normal efficient use. Track down causes of deviations.
- Shut down spare, idling, or unneeded equipment.
- Make sure that all of the utilities to redundant areas are turned off -- including utilities like cooling water.
- Renegotiate utilities contracts to reflect current loads and variations.
- Consider buying utilities from neighbors, particularly to handle peaks.
- Minimize use of flow bypasses and minimize bypass flow rates.
- Consider alternatives to high-pressure drops across valves.

CHAPTER 7

AUDIT CONCLUSION

Energy is a primary and most universal measure of all kind of work by human being and nature. It is one of the real contributions to the economic development of any nation. On account of the developing nation, the energy sector shows acceptance up to a significant level to expand energy requirements based on colossal investments to meet them.

Under the mandate of The Energy Conservation Act 2001, the Bureau of Energy Efficiency and Government of India are implementing various programmes to initiate energy conservation movement in the country. Energy Auditing is most vital part of the energy conservation strategy. In order to improve the efficiency of the Energy consuming system, energy auditing is the first necessary action to be taken by the concerned institution. For proper Energy auditing and energy accounting, parameters need to be monitored on regular basis.

The aim of this energy audit was to conduct a thorough investigation of various energy usage point in the institution and to decide how and where energy is utilized, and to identify areas consuming major energy and to distinguish diverse strategies for energy saving and to work on strategies on energy saving potential. This audit was aimed at finding a balance between the total energy inputs with its various uses in the college, and to identify all the energy streams in a facility.

With the audit WasmanPro was able to quantify energy usage according to its discrete functions. During the audit it was observed that SSN College exerted a load of 28,15,512 kWh during the period of Dec 2020 to Dec 2021. It was observed that the Institution met its power requirement from three sources and it was not entirely dependent on TANGEDCO for power requirement. Out of 28,15,512 kWh, the solar power systems generated power around 7,60,135 kWh and 37,224 kWh was generated by the DG sets, from TANGEDCO 20,18,153 kWh was taken.

The solar power systems installed in the college premises were found to be on-grid solar panels of mono crystalline micro-grid pattern, with a capacity of 0.85MW. This is highly appreciable effort taken by SSN college in reducing the dependence of conventional power and also leading to reduction of carbon footprint associated with the use of electricity

generated from the traditional source. The solar power systems were installed in 2018 in 2 phases. During 1st phase 600KW was installed and in the 2nd phase 250KW was installed. 100KW panels are set over two buildings and the rest are laid with 50KW solar panels. The institution has plans for a future expansion to achieve up to 1.5MW capacity. The power generated by the solar power system is directly given to the transformer to meet the electricity demand of the college.

DG sets are used in the college to supplement power during load shedding, or when there is a peak in demand and also when the input is not able to match the requirement. The institution has 8 DG sets, together they consume nearly 2000 L in a month.

While conducting the audit, it was noticed that the Institute has about 11285 light fittings installed in various location like academic blocs, administrative blocs, departments, labs, common area, library, canteen, hostels, sports complex, toilets etc. It was observed that tube lights accounted to nearly 6122no of 2*36 and 1*36 watts tube light. The institution had only 2670 LED lights of various wattages ranging from 18 Watts, 22Watts, 11 Watts. The institutions lighting system also included 943 CFL lights, 1461-T-5 Fittings and 20 flood lights. While doing the detailed analysis it was found that tube light constituted 54% of lighting system. Hence it can be concluded that most of lighting luminaries used in the Institution were conventional fittings like tube light, CFL, which were consuming very high electricity as compare with LED lighting luminaries.

The total lighting load from the lighting system alone is 39,424 KWH per month. So, it was suggested to replace all conventional lighting luminaries with LED system, as LED lighting system gave higher lumens with lower energy consumption and has higher life span than conventional fittings.

The cooling system present in the institution consisted of fan and air conditioners. A total of 784 A/C units were installed in the institution in various locations like Admin Bloc, departmental blocks, Auditorium, Guest room, Hostels, Sports complex etc. The total load exerted by A/C was 1,27,040 KWH per month. Most of the A/C units installed in the institution were 3 star rated A/C which lead to high power consumption. A highly commendable step taken by the Institution was that installation of split A/C. More than 53% of A/C units were split A/C types, the Split A/C consumes less power and has higher energy efficiency ratio than window AC. It was recommended to replace the 3-star A/C units with 5-

star A/C units as the latter has higher energy efficiency ratio and consumes lesser power than 3 Star A/C. It was observed that 4454 no of conventional ceiling fan with a power rating of 70 watts were installed at various points in the institution and the total Load exerted by the fan system including ceiling fan, wall fan, pedestal fan and exhaust fan was 54,852 kWh per month. The electricity consumption of the conventional fan systems was found to be very high, so it was recommended to replace the old conventional fans with new energy efficient BLDC fan as per Star rating program by Bureau of Energy Efficiency. As the BLDC fans are much efficient than conventional fans and consume lesser amount of energy, without compromising much on the air delivery. The 5-star rated BLDC ceiling fans consumes just 25-30 watts of energy, which is about 40-70% less than the regular old fans of 70 watts.

The primary objective of this Energy Audit was to determine ways to reduce energy consumption per unit of output without compromising on the efficiency. During the audit, it was found that monthly average consumption of electricity by the Institution from TANGEDCO is 1,55,242 KWH. With the audit, the exact areas of higher power consumption were found out and the best alternative for achieving the reduction in the power consumption was arrived at. It was observed that the conventional tube light, 3-star A/C units, conventional fan were the highest power consumers. It was recommended to replace these systems with energy efficient star rated 5 star split A/C, LED lights, and BLDC super fan which will help in reducing the power consumption of the institution.

At present nearly 27% of energy requirement of institution is met by solar power system. An increase in contribution by solar power systems to 40% will lead to substantial reduction in the electricity bill, this is feasible as the SSN college is situated at a place where there is ample sunlight throughout the year except during the rainy seasons. It was observed that the Institution has STP of 800 KLD capacity and the waste water coming from laundry, hostel, mess, canteen, department, and all other buildings are treated in this treatment unit. It will be highly commendable if the institution takes effort to run the STP with solar power, with solar powered pumps and other machineries to be run using solar panels installed exclusively for STP unit. The treatment unit should ensure that the treated water coming out of the treatment unit is of acceptable quality that it can be reused for flushing the toilets, gardening etc. This will lead to reduction in the water footprint intake of the institution and as well as reduction in pumping cost.

During the detailed audit, it was found that the Prospective Energy Savings in kWh that can be achieved in a day by replacing the 4454 no of 70 W Ceiling Fan with 28 W BLDC Fan is 1122 kWh equated to Savings of 9649 Rs/day. While analysing the lighting system it was found that load exerted by the lighting system can be reduced by replacing the 6122no - 2*36 Watt &1*36 Watts Conventional tube light with 22-Watt LED Bulb, leading to saving of 8664.32 Rs/day.

The proposed Energy saving that can be achieved in a day, after installation of motion sensors is 125kWh, equated to Savings of 1075 Rs/day. Also, with the replacement of single 1.5 tonne 3 star split AC with 5-star 1.5 tonne split AC, 236 Watts could be saved. So, by replacing 674 no of 3 star split AC with 5 star split A/C huge amount of reduction can be achieved in the electricity consumption. The Institution will be able to drastically bring down the EB bill by the following the above-mentioned recommendation and other power saving strategy mentioned in the report.

The Electrical audit of college buildings shows that the load of electrical equipment's can be significantly brought down by implementing the suggested measures for reducing energy consumption. Today energy conservation plays a very important role for energy conserving because energy consumption is increasing day by day but the natural resources are not increasing and also generation is not match with consumption.

So students should be made aware about simple energy conservation practices that they can follow in their daily lives while in institution and the college administration can reduce energy consumption by adopting alternative energy saving technologies suggested in this report thereby moving towards the path of sustainable tomorrow by depending more on renewable power source and implementing energy efficiency in their daily routine thereby joining hands with world towards achieving the SDG goals.

ANNEXURES

Electricity Bill (2020-21)