SGT UNIVERSITY

ENERGY AUDIT REPORT

2024-2025

Prepared by

EHS ALLIANCE

TABLE OF CONTENT

CERTIFICATE

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PRESENTED TO

SGT UNIVERSITY

Badli Road, Chandu, Budhera, Gurugram, Haryana 122505

That has been assessed by EHS Alliance for the comprehensive study of Energy Audit on institutional working framework to fulfill the requirement of

ENERGY AUDIT

ACADEMIC YEAR 2024-25

The energy-saving initiatives carried out by the institution have been verified in the report submitted and were found to be satisfactory.

The efforts taken by management and faculty towards all types of energy used in the institution and sustainability are highly appreciable and noteworthy.

EHS ALLIANCE LLP * GURUGRAM *

SIGNATURE

23.08.2025
DATE OF AUDIT

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ACKNOWLEDGEMENT

EHS Alliance LLP extends its sincere gratitude to the management of **SGT University** for entrusting us with the important responsibility of conducting the **Energy Audit**. We deeply appreciate the cooperation and support extended by all involved, which greatly contributed to the successful completion of the assessment.

We would like to express our heartfelt thanks to ***Prof. (Dr.) Hemant Verma - Hon'ble Vice Chancellor & Dr. Ajay Kumar Khanduri - Registrar***, for providing us with the opportunity to assess and evaluate the environmental performance of the campus.

Our special appreciation goes to **Dr. Suman Vij - Director, IQAC**, Audit Coordinator and faculty member in the Department of Environmental Studies, JDMC, for his unwavering support, guidance, and coordination throughout the audit process. His efforts were instrumental in facilitating the timely and effective completion of this project.

We are also grateful to the following individuals for their active participation and assistance in data collection and field measurements:

Dr. Archana Chaudhary	***Chairperson, Environment Committee***
Mr. Gaurav Chaudhary	***Admin Officer***
Dr. Manjri Shukla	***Member, Environment Committee***
Ms. Rachna	***Secretary, Environment Committee***
Ms. Trapti Sharma	***Member, IQAC***
Dr. Neha SethiAM,	***IQAC***

Their valuable contributions and commitment were vital to the smooth execution of the audit.

DISCLAIMER

This Energy Audit Report has been prepared by the Energy Audit Team of **EHS Alliance LLP** for **SGT University**, based on the input data provided by representatives of the university, supplemented by the professional expertise and informed judgment of the audit team.

While every reasonable effort has been made to ensure the accuracy and reliability of the information presented herein, the contents of this report have been compiled in good faith using the data and observations collected during the audit process. The conclusions and recommendations are based on the best estimates available at the time of preparation.

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Vijay Singh
Lead Auditor EMS & Energy

Dr. Uday Pratap
Co-Auditor EMS & Energy

ABBREVIATION

A	**Amps**
AC	**Air Conditioner**
AC	**Alternating Current**
AMET	**Academy of Maritime Education and Training**
CFL	**Compact Fluorescent Lamp**
CIP	**Comprehensive Inspection Program**
DC	**Direct Current**
HSD	**High Speed Diesel**
Hz	**Hertz**
kg	**Kilogram**
kVA	**Kilo-Volt-Ampere**
kW	**kilo Watts**
kWh	**Kilowatt Hour**
kWp	**Kilowatt Peak**
LED	**Light Emitting Diode**
LPG	**Liquefied Petroleum Gas**
MMS	**Module Mounting Structure**
MPPT	**Maximum Power Point Tracker**
NAAC	**The National Assessment and Accreditation Council**
SEC	**Specific Energy Consumption**
SPV	**Solar Photovoltaic**
STC	**Standard Test Condition**
TV	**Television**
V	**Volts**
W	**Watts**
W/m2	**Watt Per Square Meter**

OVERVIEW OF THE UNIVERSITY

SGT (Shree Guru Gobind Singh Tricentenary) University, Gurugram, spans over 70 acres of lush green campus, enveloped in serene beauty and a tranquil environment. Situated at Chandu-Bhudera on the outskirts of Gurgaon, it is less than five kilometers from the Delhi border at Daurala, offering convenient access from Indira Gandhi International Airport.

SGT University was established by the Haryana Private Universities (Amendment) Act No. 8 of 2013 to provide educational opportunities to all segments of society under the umbrella of Dashmesh Educational Charitable Trust. The Trust was founded in 1999 with the noble mission of spreading the teachings of Shree Guru Gobind Singh Ji, the great philosopher and social reformer who believed that "the spread of learning is the best service to mankind." The foundation for the university's growth was laid in 2002 with the establishment of the SGT Dental College.

In an ever-evolving work environment, SGT University fosters a culture of continuous learning to develop future innovative leaders of international repute. These leaders are quick to learn and implement new skills, understand changing customer needs, and can revamp operations effectively with a significant return on investment. SGT University's modern infrastructure and learner-centric pedagogy fully support its students. The university is focused on investing in "Nurturing Future Leaders" to produce resourceful and productive employees at all levels, from "Green Graduates" to "Tenured Senior Managers." The university is determined to instill domain-specific skills and soft skills in its emerging

innovative leaders, making them future-ready. At SGT University, the focus is on developing skills and behaviors that align with a good cultural fit and the right academic background.

Facilities in campus

Hostel: SGT University provides separate hostels for girls and boys with round-the-clock security. Each hostel features separate dining rooms, recreation rooms, and study rooms.

Transport Services: Theuniversityoperates60buses across NCR and neighbouring areas, serving both students and staff. Bus facilities are also available for hostellers for city visits, with charges based on actual usage.

Playgrounds: SGT University offers a variety of sports facilities, including playgrounds for basketball, volleyball, football, table tennis, cricket, and badminton, promoting the all-round development of students.

Canteen: The spacious cafeteria provides a wide variety of snacks to students and staff at reasonable rates.

Labs: The Department of Anatomy at SGT Medical College, Hospital, and Research Institute features a well-equipped museum, dissection hall, and research lab, with facilities for tissue processing, special staining, and research in genetics and embryology.

Gym: SGT University offers well equipped gyms in both the girls' and boys' hostels.

Seminar Hall: The Seminar Hall is an ideal venue for seminars and lectures by medical professionals, offering students insights into various fields. These sessions provide first hand info & opportunities for students to ask questions and clear their doubts.

Library: The university's fully air-conditioned library, designed for comfort and natural lighting, can accommodate450usersatatime. It offers modern facilities and resources, including CD-ROMs, online data bases, books, journals, theses, WHO publications, and more.

VISION & MISSION

VISION

To nurture individual excellence through value-based, cross-cultural, integrated, and holistic education, adopting contemporary and advanced methods blended with ethical values, contributing to building a peaceful and sustainable global civilization.

MISSION

- To impart higher education that meets global standards and the changing needs of society.
- To provide access to quality education and improve the quality of life at individual and community levels through innovations and ethical research.
- To engage with and promote the growth and welfare of the surrounding community through extension and outreach activities.
- To develop socially responsible citizens, fostering ethical values and compassion through community engagement and promotion activities.
- To create a competitive and coordinated environment where individuals develop skills and a lifelong learning attitude to excel in their endeavors.
- To develop Centers of Excellence to achieve cutting-edge technology in all fields.

SGT University offers over 160 courses, including undergraduate, postgraduate, and PhD programs, across 18 faculties.

- *Faculty of Mass Communication & Media Technology*
- *Faculty of Hotel & Tourism Management*
- *Faculty of Fashion & Design*
- *Faculty of Commerce & Management*
- *Faculty of Engineering & Technology*
- *Faculty of Agricultural Sciences*
- *Faculty of Education*
- *Faculty of Law*
- *Faculty of Science*
- *Faculty of Indian Medical System*
- *Faculty of Naturopathy and Yogic Sciences*
- *Faculty of Allied Health Sciences*
- *Faculty of Behavioral Sciences*
- *Faculty of Dental Sciences*
- *Faculty of Nursing*

- *Faculty of Medicine & Health Sciences*
- *Faculty of Physiotherapy*
- *Faculty of Pharmacy*

Library

Computer Lab

Smart classrooms

Seminar room

Geo Location
Geo Coordinates from Google maps:
28.4830607, 76.897286

AUDIT PARTICIPANTS

On behalf of SGT University

Name	Designation
Prof. (Dr.) Hemant Verma	*Hon'ble Vice Chancellor*
Dr. Ajay Kumar Khanduri	*Registrar*
Dr. Suman Vij	*Director, IQAC*
Dr. Archana Chaudhary	*Chairperson, Environment Committee*
Mr. Gaurav Chaudhary	*Admin Officer*
Dr. Manjri Shukla	*Member, Environment Committee*
Ms. Rachna	*Secretary, Environment Committee*
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Mr. Vishal Patel	*Sr. Executive, Horticulture*
Mr. Sohan Kant	*Sr. Executive, HR*
Mr. Ashwani Bhardwaj	*Incharge, Medical Store*
Mohd. Shah Zafar	*Dy. Manager*
Mr. Sunil	*Engineer*
Mr. Manbir Chaudhary	*Supervisor*
Mr. Rishi Sharma	*CEO, ACIC*
Mr. G. S. Yadav	*AGM, MEP*

On behalf of EHS Alliance LLP

Name	Position	Qualifications
Mr. Vijay Singh	*Lead Auditor*	*M.Sc. M. Tech (Environment Science & Engineering), Energy Auditor, Post Diploma in Industrial Safety Management*
Dr. Uday Pratap	*Co-Auditor*	*Ph.D., EMS: Lead Auditor ISO14001:2015, QCI–WASH*

EXECUTIVE SUMMARY

The primary objective of this **Energy Audit** was to identify opportunities to enhance the energy efficiency of **SGT University**, with a focus on reducing energy consumption while maintaining optimal levels of human comfort, health, and safety.

In addition to mapping the institution's energy usage patterns, the audit aimed to evaluate and categorize energy-efficient appliances currently in use. Furthermore, practical recommendations regarding the daily operation of commonly used electrical equipment have been provided to assist in minimizing energy consumption.

The data for this audit was systematically collected by the **EHS Alliance LLP Team**, through on-site surveys and direct analysis of the institution's infrastructure and operations. The report reflects actual energy consumption patterns across various zones within the campus, as determined using appropriate monitoring tools and equipment.

This assessment was conducted with the active cooperation and support of the university staff, and the findings offer a comprehensive overview of energy usage by area. Based on the analysis, a range of actionable measures has been recommended to support the conservation and optimized use of energy resources. The report also identifies potential areas for energy savings.

It is our sincere hope that the university administration, faculty, and students will implement these recommendations to ensure continued progress in sustainable and energy-conscious operations.

Please note that certain observations and conclusions in this report are based on estimations and generalizations where exact measurements were not feasible. These findings reflect the professional judgment of the audit team, informed by on-site interviews and field interactions with institutional representatives.

We are pleased to submit this Energy Audit Report to SGT University and appreciate the opportunity to contribute to its sustainability initiatives.

ENERGY AUDIT - ANALYSIS

1. ENERGY CONSUMPTION

To understand the Energy Consumption trends and to analyze the average monthly consumption we have collected electricity energy bills from July 2024 to June 2025.

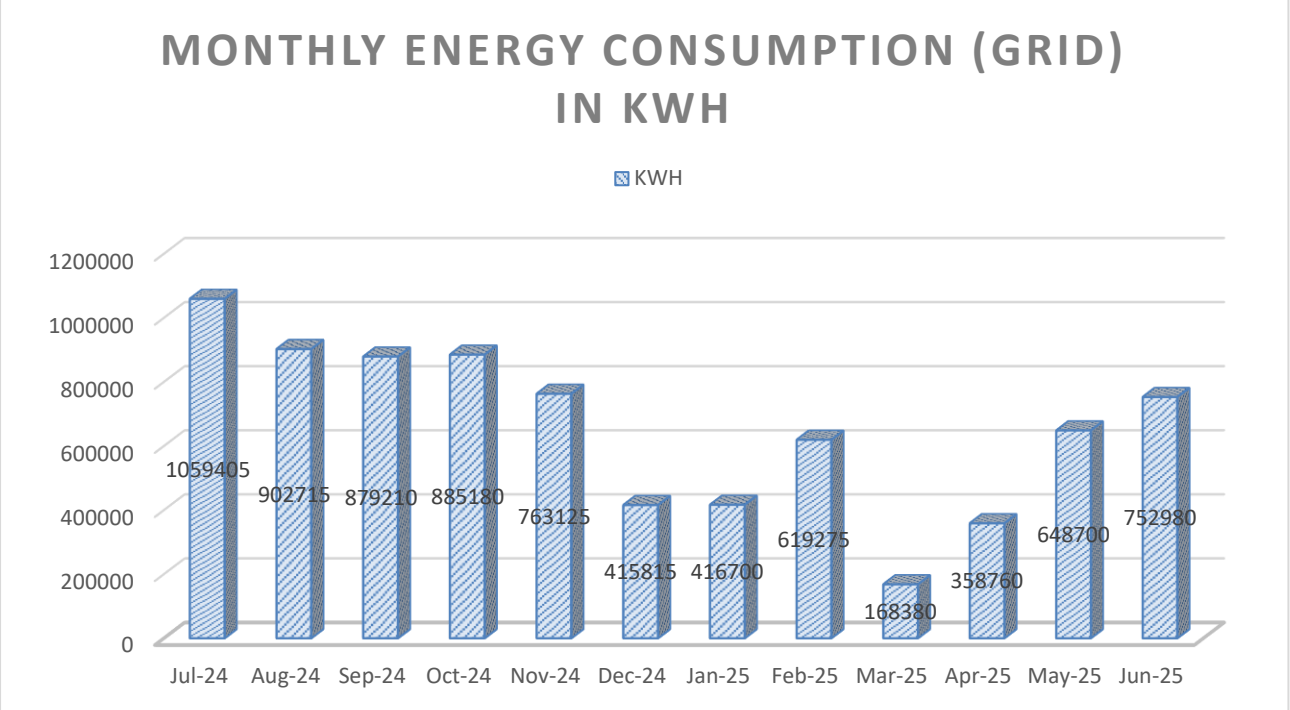
The details of **"Meter Connection"** at **"SGT University"** are as follows-

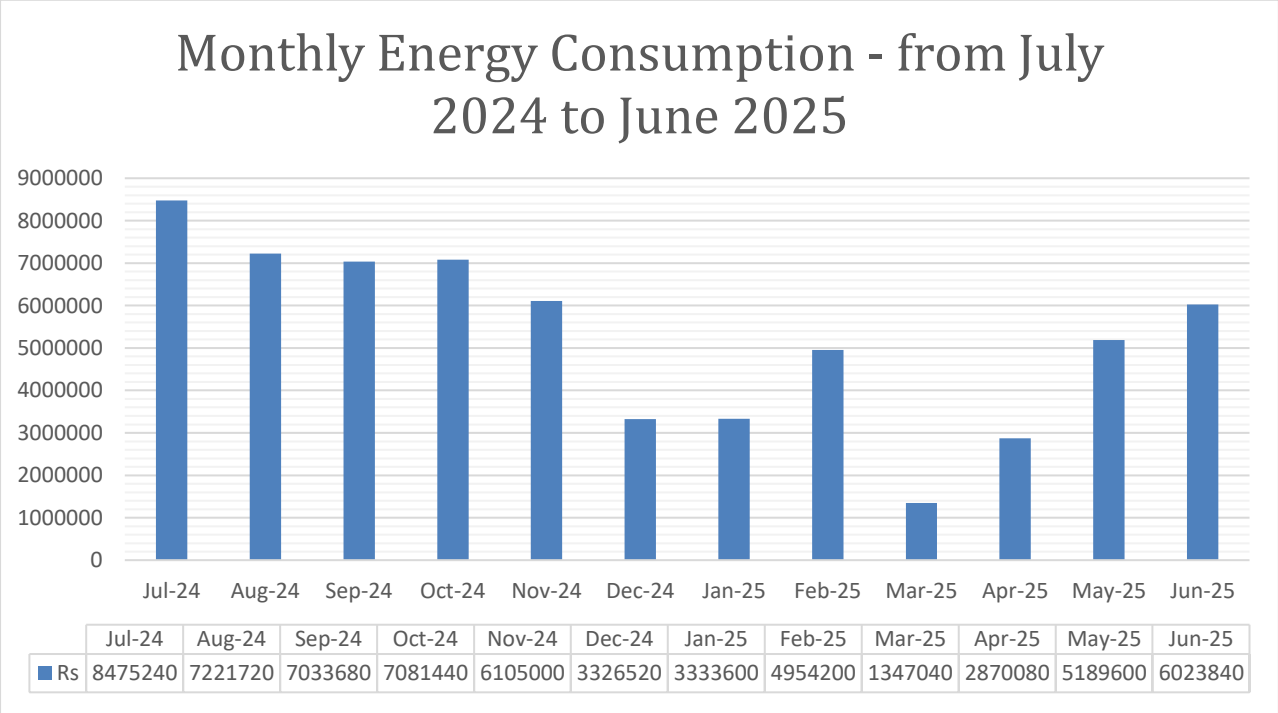
Name	-	Chairman Dasmesh
CA No.	-	1578781000

1.1 SUMMARY OF MONTHLY ELECTRICITY CONSUMPTION AND TOTAL BILL AMOUNT

To understand the Energy consumption trend and for developing the baseline parameter we have collected monthly energy bill for the 12 months i.e. from July 2024 to June 2025

Month	Grid Units	Amount	Solar Units	DG - kWh	Net metering Units	Amount
Jul-24	1,059,405	8.00	71,300	81,099	1,211,804	8,475,240
Aug-24	902,715	8.00	67,108	83,494	1,053,317	7,221,720
Sep-24	879,210	8.00	66,965	83,004	1,029,179	7,033,680
Oct-24	885,180	8.00	70,981	15,837	971,998	7,081,440
Nov-24	763,125	8.00	38,333	13,676	815,134	6,105,000
Dec-24	415,815	8.00	46,754	9,880	472,449	3,326,520
Jan-25	416,700	8.00	49,996	3,681	470,377	3,333,600
Feb-25	619,275	8.00	64,676	18,936	702,887	4,954,200
Mar-25	168,380	8.00	88,098	3,351	259,829	1,347,040
Apr-25	358,760	8.00	72,948	67,406	499,114	2,870,080
May-25	648,700	8.00	59,240	206,138	914,078	5,189,600
Jun-25	752,980	8.00	65,664	79,251	897,895	6,023,840
SUM	**7870245**		**762,062**	**665,753**	**9,298,060**	**62,961,960**





	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25
Rs	8475240	7221720	7033680	7081440	6105000	3326520	3333600	4954200	1347040	2870080	5189600	6023840

Electricity generation from Solar PV

Due to issue in digital solar inverter meter, we have taken average number of powers generated, considering the 910 KW capacity in Gurgaon location.

Inverter No.	yamuna	C-Block	D-Block	A-Block	E-Block	Kanchenjunga	Hospital	TOTAL
Capacity(KW)	30	150	100	200	130	50	250	
Jul-24	2885.7	17691.5	7614	19510	11188	239.4	12171	71299.6
Aug-24	2522.4	16214.4	7040	16827	9996	192.6	14315.1	67107.5
Sep-24	2744.7	16384.5	7729	17339	11259	202.8	11306.3	66965.3
Oct-24	3068.1	17179.5	8439.5	19893	8547	246.4	13607.5	70981
Nov-24	2010.9	10002.5	3777	12757	4160	121.8	5503.9	38333.1
Dec-24	1860.3	11979	5976	12031	5738	163	9006.2	46753.5
Jan-25	1958.7	12485	5874	13108	5451	125.4	10993.9	49996
Feb-25	2802.6	16947.5	7841	17803	7119	211.4	11951.9	64676.4
Mar-25	3762.9	21470	9389	23654	8712	275.4	20834.5	88097.8
Apr-25	3535.2	18950	8287.5	21071	8127	276.8	12700.5	72948
May-25	3474.3	21630	7473.5	6796	7617	274.4	11974.5	59239.7
Jun-25	3025.8	18920	6776	19254	7249	248	10191	65663.8
Total	**33651.6**	**199853.9**	**86216.5**	**200043**	**95163**	**2577.4**	**144556**	**762,062**

2. DIESEL CONSUMPTION

From July 2024 to June 2025, SGT University has consumed 227117 liters of fuel.

Month	Diesel (Liters)
Jul-24	27776
Aug-24	28476
Sep-24	28225
Oct-24	4730
Nov-24	5790
Dec-24	3600
Jan-25	1870
Mar-25	7300
Apr-25	1720
Mar-25	24400
May-25	67100
Jun-25	26130
Total	**227117**

Five-year usage pattern is shown below

3. ANALYSIS OF DG SETS

In the campus, there are nine Diesel Generator (DG) set for its electrical power needs in case of Grid power failure. DG sets capacity is 6875 kVA.

Rated capacity	Hz	Sl No.	Make	Volts	PF	Phase	RPM	Amps	Mfg.
1250	50	25474119	Cummins	415	0.94	3	1500	1739	2022
750	50	25381383	Cummins	415	0.94	3	1500	1043	2012
500	50	25349907	Cummins	415	0.94	3	1500	696	2010
250	50	25764515	Cummins	415	0.94	3	1500	348	2010
125	50	62687154	Cummins	415	0.94	3	1500	174	2008
1500	50	25475338	Cummins	415	0.94	3	1500	2087	2022
1250	50	25470765	Cummins	415	0.94	3	1500	1739	2021
1250	50	25466043	Cummins	415	0.94	3	1500	1739	2022

DG Set Operation details		
Operating hours during testing	Hours	0.5
% Loading	%	71.65
Energy Generation	kWh	33.92
Load	kVA	86.75
Fuel consumption during testing	Litre	12
Specific energy generation	kWh/litre	3.14

Observation and Suggestions: -

Soundproof silent generators are an efficient tool to keep both noise and vibration at low levels. For the power backup of the institution, the soundproof model is installed in the institution.

As per the trial taken during the energy audit the percentage loading of DG set is 71.65% which is ok and specific energy consumption of DG Sets 3.14 kWh/Litre which is satisfactory because as per manufacturer recommendation, best practices for SEC in DG sets range from 3.0 to 3.5 kWh/Litre and above.

We recommend university to initiate stack monitoring of DG set through authorized lab.

4. AC SYSTEM

Energy Efficiency Ratio (EER): The performance of smaller chillers and rooftop units is frequently measured in EER rather than kW/ton. EER is calculated by dividing a chiller's cooling capacity (in Btu/h) by its power input (in watts) at full-load conditions. The higher the EER, the More efficient the unit. The cooling effect produced is quantified as tons of refrigeration (TR). The above TR is also called as air-conditioning tonnage.

There are 1977 ACs installed in SGT University in various areas of various type and capacity, details are given below: -

Sl. No.	Type of AC	Capacity in Tons	Quantity	Load in Tons
1	AHU	8.5	2	17.0
2	AHU	10.0	2	20.0
3	AHU	11.0	1	11.0
4	AHU, VRV	16.0	1	16.0
5	Cassette AC	1.5	1	1.5
6	Cassette AC	2.0	42	84.0
7	Cassette AC	3.0	161	483.0
8	Cassette AC	4.0	61	244.0
9	Ductable AC	1.5	6	9.0
10	Ductable AC	2.0	8	16.0
11	Ductable AC	4.0	3	12.0
12	Ductable AC	5.5	3	16.5
13	Ductable AC	8.0	11	88.0
14	Ductable AC	8.5	11	93.5
15	Package AC	7.0	2	14.0
16	Package AC	18.0	2	36.0
17	Split	1.0	50	50.0
18	Split	1.5	6	9.0
19	Split	2.0	12	24.0
20	SPLIT A.C./Cassette	2.0	3	6.0

21	Split AC	0.8	1	0.8
22	Split AC	1.0	41	41.0
23	Split AC	1.5	175	262.5
24	Split AC	2.0	341	682.0
25	Split Ac	1.5	2	3.0
26	Split Ac	2.0	2	4.0
27	Split AC/cassette	2.0	6	12.0
28	Tower AC	3.0	2	6.0
29	Tower AC	4.0	2	8.0
30	VRF	10.0	9	90.0
31	VRF	12.0	7	84.0
32	VRF	16.0	2	32.0
33	VRF	24.0	1	24.0
34	VRF	14.0	3	42.0
35	VRF	20.0	12	240.0
36	VRF (Cassette type)	10.0	1	10.0
37	VRF (Cassette type)	12.0	1	12.0
38	VRF (SPLIT TYPE)	10.0	3	30.0
39	VRF (SPLIT TYPE)	12.0	1	12.0
40	VRF (SPLIT TYPE)	20.0	2	40.0
41	VRV	2.0	2	4.0
42	VRV	12.0	1	12.0
43	Window AC	0.8	8	6.0
44	Window AC	1.0	650	650.0
45	Window AC	1.2	81	97.2
46	Window AC	1.5	146	219.0
47	Window AC	1.8	12	21.0
48	Window AC	2.0	3	6.0
49	Window AC	2.3	2	4.5
50	Window AC	2.5	2	5.0
51	Window AC	2.5	2	5.0
52	Window AC	1.0	31	31.0
53	Window AC	1.2	7	8.4
54	Window AC	1.5	27	40.5
55	Window AC	2.0	1	2.0
		Grand Total	**1977**	**3997.4**

Observation:

- There are few AC outdoor units that needs insulating again chilled water pipes and ducts to prevent thermal losses. Use high-quality insulation and periodically inspect for wear.
- Several AC units observed are more than 8–10 years old, operating with reduced efficiency compared to modern energy-efficient models.
- A mix of BEE 3-star and non-rated ACs are in operation.
- Indoor setpoints observed were lower than recommended (20–22 °C in some cases), leading to overcooling and unnecessary energy consumption.

Recommendations:

- Consider heat recovery ventilators (HRVs) or energy recovery ventilators (ERVs).
- Maintain 24–26 °C in summer and avoid overcooling.
- Install programmable or smart thermostats with occupancy sensors.
- Check refrigerant levels and duct leakages.
- Introduce preventive maintenance schedules to maintain peak efficiency.
- Encourage night purging / natural ventilation where possible.
- Implement demand-controlled ventilation (CO_2-based).
- Encourage staff to switch off ACs when rooms are unoccupied.

Remarks:

The Energy Efficiency Ratio (EER) of the air conditioning units currently in use has been reviewed and is found to be satisfactory. However, for future procurement, it is strongly recommended that the university opts for BEE 5-Star rated inverter-based split air conditioners, as they consume significantly less energy compared to non-rated or lower-rated models.

Additionally, we recommend that SGT University implement a regular maintenance schedule for all air conditioning units. This should include corrective measures, particularly the insulation of refrigerant lines, to minimize energy losses and enhance overall system efficiency.

5. FANS ANALYSIS

In the SGT University, there are 6244 Fans installed, out of which 6146 fans are of 60W, and 98 fans are 65W. The observations and suggestions are given below.

Sl No.	Location/Identification	Ceiling Fan-60W	WALL FAN/65 watt
1	A Block	408	9
2	B Block	782	8
3	C Block	468	20
4	D Block	527	32
5	E Block	599	11
6	Aryabhatta	104	
7	Homi J Bhaba	80	
8	Cv Raman	320	
9	Ganga	260	
10	Yamuna	240	
11	Krishana	80	
12	Narmada	80	
13	Godavari	80	
14	Sarsvati	52	
15	Kaveri	60	
16	APJ Abdul Kalam	40	
17	Kanchenjunga	118	3
18	Nilgiri	139	1
19	Law College	86	2
20	Jai Pg	39	
21	Happiness Center	20	
22	Alankaar Office	19	
23	Himalya Hostel	233	
24	Udaan School / Nursing Staff	33	
25	Hospital	1209	
26	Canteen	14	3
27	Common Area (Mess, Shopping Complex, Gym Outer Area)	56	9
	Total Qty	**6146**	**98**

Observation and Suggestions: -

The university currently utilizes ceiling fans with a power rating of approximately 60 watts. However, BEE 5-Star rated ceiling fans with a significantly lower power consumption of 30 watts are readily available in the market.

Note: The actual energy savings achieved may vary depending on the operating hours of the equipment. Similarly, the payback period is subject to change based on the actual cost of investment, which includes the cost of the fan and any associated accessories. The investment cost considered in this report is tentative, and variations in pricing may affect the final ROI.

6. ANALYSIS OF LIGHTING SYSTEM

6.1 BRIEF DESCRIPTION OF EXISTING SYSTEM

For assessing the energy efficiency of the lighting system, an Inventory of the Lighting System has been noted/collected, with the aid of a lux meter, measurement and documentation of the lux levels at various locations at the working level have been done.

6.2 INVENTORY OF LIGHTING

Light Details	Total Qty	Watt	Total watt
0 W-LED Bulb	60	2	120
Ceiling fan	6146	60	368760
6 WATT LED LIGHT	1363	6	8178
7 WAT LED BLUB	1127	7	7889
12 WAT LED LIGHT	243	12	2916
15 WAT LED	1017	15	15255
18 WATT LED LIGHT	241	18	4338
20 WAT LED (Ceiling)	47	20	940
20 WAT LED 4'	4595	20	91900
22 WAT LED	1094	22	24068
24 WATT LED	61	24	1464
36 WATT LED	1481	36	53316
36 WATT TUBE	199	36	7164
Exhaust Fan (60 Watt)	1070	60	64200
Exhaust Fan (150 Watt)	31	150	4650
Wall Fan	98	65	6370
CFL 9 Watt	16	9	144
Geyser	701	2000	1402000
Solar Geyser	4		0
Cooler	50	746	37300
Smart Box	82	750	61500
Led TV 32"	6		0
Led TV 56"	6		0
Freeze	14		0
Water Cooler	17		0
Insert Killer	8	1200	9600
Air Cooler	2	500	1000
72 WATT LED	21	72	1512
Flood Light 200 watt	110	200	22000
Deep Freeze (2 Ton)	5	2000	10000
Deep Freeze (4 Ton)	3	4000	12000
Chapati Machine	8	2000	16000
Rice Boiler	1	2000	2000
Induction	3	3000	9000
Oven	4	2000	8000

Total no of Tube light (36W)	Nos.	1,680
Total wattage of 36W Tube Lights	Watt	60,480
Total wattage of Led Tube Lights (20W)	Watt	33,600
Total saving in Wattage after replacement	Watt	26,880
Operating hours per day	Hours	8
Operating days per annum	Days	240
Energy charges per unit in Rs.	INR	8
Saving in Rs. /Annum	INR	4,12,877
Investment INR	INR	200
Payback period: - Years	YEARS	1.2

Observation & Suggestion: The university has adopted an LED-based lighting system, which is a significant step toward energy efficiency. LED lights are known for their low energy consumption, extended lifespan, and minimal heat emission, making them an ideal choice for sustainable campus lighting.

It is recommended that the remaining 36-watt conventional tube lights be replaced with LED alternatives. This transition has the potential to yield an additional energy savings of approximately 26880 watts. The payback period for this investment is estimated to be 1.2 year, making it both an economically and environmentally beneficial decision.

Furthermore, we advise the university to expand the installation of motion sensor-based lighting systems in commonly used areas such as corridors, washrooms, and the library. This would further reduce unnecessary energy consumption by ensuring that lights are only activated when the space is in use.

6.3 LUX MEASUREMENT

Description	Lux	Remark
Class Rooms	120 to 235	Acceptable
Offices	130 to 240	Acceptable
Corridors	35 to 90	Acceptable
Washrooms	45 to 76	Acceptable
Outdoor	36 to 95	Acceptable
Computer Lab	150 to 289	Acceptable
Parking area	45 to 94	Acceptable
Canteen	69 to 185	Acceptable

Table - Luminous Performance Characteristics of Commonly Used Luminaries					
Type of Lamp	Lumens/Watt		Colour Rendering Index	Typical Application	Typical Life
	Range	Avg.			
Incandescent	8-18	14	Excellent (100)	Homes, restaurants, general lighting emergency lighting	1000
Fluorescent lamps	46-60	50	Good w.r.t coating (67-77)	Offices, shops, hospitals, homes	5000
Compact fluorescent Lamps (CFL)	40-70	60	Very Good (85)	Hotels, shops, homes, offices	8000-10000
High-pressure mercury (HPMV)	44-57	50	Fair (45)	General lighting in factories, garages, and car parking. floodlighting	5000
Halogen lamps	18-24	22	Excellent (100)	Display, flood lightening, stadium exhibition grounds, construction areas	2000 - 4000
High-pressure sodium (HPSV) SON	67-121	90	Fair (22)	General lighting in warehouses, factories, street lighting	6000 - 12000
Low-pressure sodium (LPSV) SOX	101-175	150	Poor (10)	Roadways, tunnels, canals, street lighting	6000 - 12000
Metal halide lamps	75-125	100	Good (70)	Industrial bays, spotlighting, floodlighting, retail stores	8000
LED Lamps	30-50	40	Good (70)	Reading lights, desk lamps, night lights, spotlights, security lights, signage lights, etc.	40000 - 100000

7. OTHER POWER CONSUMPTION

7.1 INVENTORY OF IT INFRASTRUCTURE

Row Labels	A Block	B Block	C Block	Campus Gates	D Block	E Block	Hospital	Hostel	Staff Residence	Grand Total	In Watt
Access Point	31	78	27		30	47	27	754	19	1013	20
Core Switch		2								2	800
Desktop	507	136	199		140	670	292	10		1954	150
Firewall		4								4	260
Printer	63	38	52		40	50	120			363	280
Projector	46	13	25		20	74	33			211	320
Server		13								13	1100
Rack Storage		1								1	1300
Scanner		9	5		3	3	3			23	50
Smart Board	17	8	17		13	14	2			71	750
Switch	77	26	47	6	22	63	44	87	6	378	260
Wifi Controller		2								2	260
Grand Total	**741**	**330**	**372**	**6**	**268**	**921**	**521**	**851**	**25**	**4035**	**5550**

7.2 WATER PUMP DETAILS

Sr. No.	Description	Unit	Pump No.-1	Pump No.-2	Pump No.-3
1	Rated Power of Motor	KW	3.5/5.0	0.75/1.0	5
2	Motor Eff.	%	60%	60%	70%
3	Discharge Head	m	6.1/0.6 LPH	2800-880 LPH	10-42 LPH
4	Suction Head	m	36/52	18-45	15-50
5	Pump Type	Submersible/ Monoblock/ Centrifugal Etc.	submersible	Submersible	Monoblock

7.3 OTHER LOADS

REFRIGERATORS

Location	Make	Years	Capacity	Quantity (Pcs.)	Total
Medical Reception Pantry	L.G	2018	185	1	1
Medical Pathology Hod	L.G	2018	185	1	1
Medical Community Medicine Hod	L.G	2018	185	1	1
Medical Formic Medicine Doxology Hod	Voltas	2019	192	1	1
Medical Physiology Hod	Voltas	2019	192	1	1
Medical Physiology pantry	Voltas	2019	192	1	1
Medical Biochemistry Hod	Samsung	2018	185	1	1

Medical Biochemistry lab	L.G	2018	185	1	1
Medical Biochemistry pantry	L.G	2018	185	1	1
Medical Microbiology Hod	L.G	2018	185	1	1
Microbiology pantry	L.G	2018	185	1	1
Research laboratory Formic Doxology	Voltas	2019	192	1	1
Medical Anatomy lab	L.G	2018	185	1	1
Medical Anatomy Hod	Samsung	2019	185	1	1
Medical Anatomy pantry	Samsung	2019	185	1	1
Medical Account pantry	Samsung	2019	185	1	1
Medical Dean office Ist.floor	Voltas	2019	192	1	1
Medical 3rd.floor pharmacology Hod	Samsung	2018	185	1	1
Medical 3rd.floor pharmacology Lab	Samsung	2019	185	1	1
Animal house Instrument room	L.G	2018	185	1	1
Anatomy	Voltas	2010	4 Dead Body	1	1
Anatomy	Voltas	2010	4 Dead Body	1	1
Anatomy	Voltas	2010	4 Dead Body	1	1
Anatomy	Voltas	2010	4 Dead Body	1	1
Anatomy	Voltas	2010	6 Dead Body	1	1
Animal house	Voltas	2010	150	1	1
Alit Dean office room no. 055	L.G	2018	185	1	1
Microbiology Research laboratory	L.G	2018	185	1	1
Simulation Lab	L.G	2018	185	2	2
Hospital Casualty	L.G	2009	185	1	1
Hospital ICCU	Samsung	2021	185	1	1
Hospital Pharmacy	Samsung	2017	394	1	1
Hospital Pharmacy	Samsung	2017	394	1	1
Hospital Pharamcy	Samsung	2017	394	1	1
Pul. OPD no.1LG-33	LG	2017	192	1	1
Hospital Dailysis	Samsung	2019	192	1	1
Hospital Physiotherpy	Zem	2019	45	1	1
OT Master room	LG	2010	192	1	1
Near OT no.7	LG	2010	192	1	1
Labour room	L.G	2010	192	1	1
Labour Store	L.G	2010	192	1	1
Pedia OPD	L.G	2010	185	1	1
ENT OPD no.1	Samsung	2021	192	1	1
Biochemistry	Samsung	2019	394	1	1
Biochemistry	LG	2010	185	1	1
Mirco ICTC	LG	2010	185	1	1
Mirco Infection Control	LG	2010	185	1	1
Mirco Parasitology	L.G	2010	250	1	1
Micro Immunology	L.G	2010	185	1	1
Micro Serology	L.G	2010	250	1	1
Micro Bacteriology	L.G	2010	185	1	1
Micro Bacteriology	Videocon	2019	250	1	1
Micro Store	Videocon	2018	250	1	1
Micro Store	Samsung	2019	394	1	1
Path. HOD	L.G	2017	185	1	1
Path Histopathology	LG	2010	250	1	1
Path Clinical Pathology	L.G	2010	185	1	1
Path Haematology	LG	2010	185	1	1

Path Haematology	L.G	2010	185	1	1
Path Haematology	L.G	2022	394	1	1
Surgery Ward 102	Samsung	2021	192	1	1
Private ward 102	Videocon	2010	45	1	1
F. Surgery 114	Samsung	2019	192	1	1
Surgery dept. 113	Samsung	2019	192	1	1
Post opp 105	Samsung	2019	192	1	1
Eye Ward 107	L.G	2010	185	1	1
Eye Ward pantry	L.G	2010	185	1	1
F. Surgery ward 109	L.G	2010	185	1	1
Surgery ward108	L.G	2010	185	1	1
Private ward108	Videocon	2010	45	1	1
OBS 202	Samsung	2019	192	1	1
Private ward 202	Videocon	2010	45	1	1
Psychiatry 202	L.G	2009	185	1	1
Blood bank store	L.G	2018	192	1	1
Blood bank serology	L.G	2009	290	1	1
Pedia 208	LG	2010	185	1	1
NICU 208	L.G	2010	185	1	1
Private ward 207	Videocon	2010	45	1	1
Ward no.207	Videocon	2010	45	1	1
Medicinal 302	LG	2010	185	1	1
Private ward 302	Videocon	2010	45	1	1
ENT ward 306	Samsung	2019	192	1	1
Nursing dept.310	LG	2010	185	1	1
Ortho male 402	Videocon	2010	45	1	1
F. ENT 309	Samsung	2022	192	1	1
Private ward 307	Videocon	2010	45	1	1
Medicinal 307	Videocon	2010	45	1	1
Food distribution	Videocon	2010	185	1	1
Ortho 401	Samsung	2019	190	1	1
Eye Dept. 412	LG	2010	185	1	1
PICU 405	Samsung	2019	190	1	1
PUI. 409	LG	2010	185	1	1
P.V.C	Voltas	2017	185	1	1
ENT Ward male	Voltas	2019	185	1	1
Orthopaedic Ward male	L.G	2018	185	1	1
Paediatrics ICU 4th. Floor	L.G	2018	185	1	1
Pulmonary ward male	L.G	2018	185	1	1
Dental pantry	L.G	2017	185	1	1
OMR Hod	L.G	2017	185	1	1
Perio Hod	L.G	2017	185	1	1
Perio lab	L.G	2017	185	1	1
Pashto Hod	Voltas	2018	185	1	1
Pashto lab	Voltas	2018	185	1	1
Oral surgery Hod	L.G	2017	185	1	1
Oral surgery OT	L.G	2017	185	1	1
Conservative Hod	L.G	2018	185	1	1
Pedio Hod	Samsung	2018	192	1	1
ORTHO HOD Room	Samsung	2018	192	1	1
PCD P.G Section	Samsung	2018	192	1	1

Oral Pathology Hod	L.G	2017	185	1	1
Oral Pathology Reader room	L.G	2018	185	1	1
Dental store	L.G	2018	185	1	1
PCD V.G Section G.F	Samsung	2019	192	1	1
PCD V.G Section G.F	L.G	2018	185	1	1
D - Block Ayurvedy 005	Samsung	2017	192	1	1
Ayurvedy pantry	L.G	2018	185	1	1
D-Block lower floor physiotherapy	L.G	2018	185	1	1
D-Block lower floor kalpna store room	L.G	2018	185	1	1
D-Block G.floor Ayurvady pantry	Voltas	2017	185	1	1
D-Block 2nd. Floor Nutritim Lab	L.G	2018	185	1	1
D-Block 3rd. Floor pharmacy pantry	Samsung	2019	192	1	1
D -Block Pharmacy lab 003	L.G	2018	185	1	1
Nursing pantry	L.G	2018	185	1	1
Vaya chiliast 07 G.F	Voltas	2017	185	1	1
A -Block VC Office pantry	L.G	2017	185	1	1
A -Block Organic chemistry lab 402	L.G	2017	185	1	1
Hotel management 2nd.floor-A-Block	L.G	2017	185	1	1
Hotel management 2nd.floor	Voltas	2018	185	1	1
Hotel management 2nd.floor	Samsung	2019	192	1	1
Hotel management 2nd.floor	Samsung	2019	192	1	1
Hotel management 2nd.floor	Samsung	2019	192	1	1
Hotel management 2nd.floor	Samsung	2019	192	1	1
Hotel management 2nd.floor Kitchen Demo room	Voltas	2018	185	1	1
Hotel management 2nd.floor	Voltas	2018	185	1	1
Hotel management 2nd.floor	Voltas	2018	185	1	1
Hotel management 2nd.floor Store room	Voltas	2018	185	1	1
Hotel management 2nd.floor	L.G	2017	185	1	1
Horticulture lab 416	L.G	2017	185	1	1
Forensic lab 414	L.G	2018	185	1	1
Soil Agronomy lab 410	L.G	2018	185	1	1
Engineering pantry	L.G	2016	185	1	1
Engineering room no.07	L.G	2017	185	1	1
Law college Dean	L.G	2017	185	1	1
Day Care	L.G	2018	185	1	1
Room no 101	L.G	2017	185	1	1
Room no 102	L.G	2017	185	1	1
Room no 103	L.G	2017	185	1	1
Room no 103	Voltas	2018	185	1	1
Room no 203	L.G	2018	185	1	1
Room no 204	Voltas	2018	185	1	1
Room no 301	Voltas	2018	185	1	1
Room no 302	Voltas	2018	185	1	1
Room no 303	L.G	2018	185	1	1
Room no 304	L.G	2018	185	1	1
Room no 401	L.G	2018	185	1	1
Room no 402	L.G	2018	185	1	1
Room no 403	Voltas	2018	185	1	1
Room no 404	Voltas	2018	185	1	1
Room no 501	Voltas	2018	185	1	1
Room no 502	Voltas	2018	185	1	1

Room no 503	L.G	2017	185	1	1
Room no 504	L.G	2017	185	1	1
Room no 102	L.G	2017	185	1	1
Room no 103	L.G	2017	185	1	1
Room no 303	L.G	2017	185	1	1
Room no 304	Voltas	2018	185	1	1
Room no 404	Voltas	2018	185	1	1
Mortuary			2 body	1	1
Mortuary	Blue star	2024	2 body	1	1

WATERCOOLER

S.No.	Location	Water cooler	Make	Model	Capacity	Quantity	Total
1	Medical Ground floor	Water Cooler	Blue star	2023	150	1	1
2	Medical first floor	Water cooler	Blue star	2016	150	1	1
3	Medical second floor	Water cooler	Blue star	2016	150	1	1
4	Medical 3rd floor	Water cooler	Blue star	2023	150	1	1
5	Medical Library	Water cooler	USHA	2016	80	1	1
6	Medical Reception	Water Dispenser	Blue star	2017	20	1	1
7	Simulation Lab	Water Dispenser	Blue star	2017	20	1	1
		Hospital					
8	Hospital G. floor	Water cooler	Blue star	2015	80	1	1
9	Hospital Ist. Floor	Water cooler	Blue star	2015	150	2	2
10	Hospital 2nd. Floor	Water cooler	Blue star	20,232,016	150,80	2	2
11	Hospital 3rd. floor	Water cooler	Blue star	20,232,016	150,80	2	2
12	Hospital 4th. floor	Water cooler	Blue star	2016	150	1	1
13	Hospital 5th. floor	Water cooler	Blue star	2016	150	1	1
14	Hospital LG floor	Water cooler	Blue star	2016	150	2	2
15	Hospital LG floor	Water cooler	Blue star	2025	150	1	1
		B Block					
14	Dental Expert	Water Dispensor	Blue star	2018	20	1	1
15	Dental (near OPD)	Water cooler	Blue star	2015	150	1	1
16	Dental (2nd. floor)	Water cooler	Blue star	2015	150	1	1
17	Dental (Third floor)	Water cooler	Blue star	2015	150	1	1
18	Dental Pantry	Water Dispenser	Blue star	2017	20	1	1
		D Block					
19	D-Block lower G.floor	Water cooler	Blue star	1	150	2	2
20	D-Block G.floor	Water cooler	Blue star	2016/2022	150	2	2
21	D-Block G.floor Reception area	Dispenser	Blue star	2019	20	1	1
22	D Block Nusrsing Faculty	Dispenser	Blue star	2015	20	1	1
23	D-Block Ist. Floor	Water cooler	Blue star	2016/2022	150	2	2
24	D-Block 2nd.floor	Water cooler	Blue star	2016/2022	150	2	2
25	D-Block 3rd.floor	Water cooler	Blue star	2016	150	1	1
26	D-Block 4th.floor	Water cooler	Blue star	2022	150	1	1

	A Block						
27	A-Block G.Floor	Water cooler	Blue star	2,016	150,80	3	3
28	A-Block G.Floor Registrar office	Water dispensor	Blue star	2,020	20	1	1
29	A B block 1st floor VC office pantry	Water dispensor	Blue star	2,020	20	1	1
30	A-Block Ist. Floor	Water cooler	Blue star	2016	150,	3	3
31	A Block Pro chancllor office pantry	Water Dispensor	Blue star	2016	20	1	1
32	A-Block 2nd.Floor	Water cooler	Blue star	2016	150	3	3
33	A-Block 3rd.Floor	Water cooler	Blue star	2016	150	3	3
34	A Block Purchase office	Water Dispensor	Blue star	2016	20	1	1
35	A-Block 4th.Floor	Water cooler	Blue star	2016	150	3	3
	E Block						
36	Engineering college G.F	Water cooler	Blue star	2015	150	1	1
37	Corporate office 1st floor	Water Dispensor	Voltas	2015	20	1	1
38	Engineering college Ist floor	Water cooler	Blue star	2015	150	1	1
39	Engineering college 2nd. floor	Water cooler	Voltas	2016	150	1	1
40	Engineering college 3rd. floor	Water cooler	Blue star	2016	150	1	1
41	Engineering college 4th. floor	Water cooler	Blue star	2016	150	1	1
42	Engineering college Workshop	Water cooler	Usha	2016	120	1	1
43	Engineering pantry	Water Dispenser	Blue star	2019	20	1	1
	Law College						
44	Law college G. Floor	Water cooler	Blue star	2016	150	1	1
45	Law college Ist. Floor	Water cooler	Blue star	2016	150	1	1
	Ganga Hostel						
46	Ganga hostel 1st floor	Water dispensor	Blue star	2024	20	1	1
47	Ganga mess	Water cooler	Blue star,USHA	2015	150,120	2	2
48	Ganga 2nd. Floor	Water cooler	Blue star	2015	150	1	1
49	Ganga 4th. Floor	Water cooler	Blue star	2015	150	1	1
50	Vistor room	Water Dispenser	Blue star	2017	20	1	1
	Himalaya Hostel						
50	G Floor	Water dispensor	Blue star	2024	20	1	1
51	G.Floor Himalaya	Water cooler	Blue star	2015	150	1	1
52	2nd floor	Water cooler	Blue star	2023	150	1	1
53	Ist. Floor Himalaya	Water cooler	Blue star	2015	150	1	1
54	Third floor Himalaya	Water cooler	Blue star	2015	150	1	1
	Yamuna Hostel						
55	Yamuna G. Floor	Water dispensor	Blue star	2024	20	1	1
56	Yamuna G. Floor	Water cooler	Blue star	2016	150	1	1
57	Yamuna Ist. Floor	Water cooler	Blue star	2016	150	1	1
58	Yamuna 2nd. Floor	Water cooler	Blue star	2016	150	1	1
59	Yamuna 3rd. Floor	Water cooler	Blue star	2016	150	1	1
	Godavari hostel						
60	Godavari 1st floor	Water dispensor	Blue star	2024	20	1	1
61	Godavari hostel 2nd. Floor.	Water cooler	Blue star	2015	150	1	1
62	Godavari hostel 4th. Floor.	Water cooler	Blue star	2015	150	1	1
	Narmada Hostel						
63	Narmada 1st floor	Water dispensor	Blue satr	2024	20	1	1
64	Narmada 2nd. Floor	Water cooler	Blue star	2016	150	1	1

65	Narmada 4th. Floor	Water cooler	Blue star	2016	150	1	1
	CV Raman Block						
66	Ground floor	Water dispensor	Blue satr	2024	20	1	1
67	C Block Ist floor	Water cooler	Blue star	2016	150	2	2
68	C Block 2nd. floor	Water cooler	Blue star	2016	150	2	2
69	C Block 3rd. floor	Water cooler	Blue star	2016	150	2	2
70	C Block 4th. floor	Water cooler	Blue star	2016	150	1	1
71	C Block 5th. floor	Water cooler	Blue star	2016	150	1	1
72	Hapiness Centre						
73	Ayurvedic G.Floor	Water cooler	Blue star	2016	150	1	1
74	Mess.						
75	Dr. Mess	Water cooler	Blue star	2015	150	1	1
76	Students mess	Water cooler	Blue star	2015	150	1	1
77	Staff mess	Water cooler	Blue star/ Birla Aircon	2015	150/70	2	2
78	Krishna hostel.						
79	Krishna hostel 1st floor	water dispensor	Blue star	2024	20	1	1
80	Krishna hostel 2nd. Floor.	Water cooler	Blue star	2014	150	1	1
81	Krishna hostel 4th. Floor.	Water cooler	Blue star	2014	150	1	1
82	Nilgiri Hostel						
83	Nilgeri Hostel G. Floor	Dispenser	Voltas	2014	150	1	1
84	Nilgeri Hostel Ist. floor	Water cooler	Blue star	2014	150	1	1
85	Nilgeri Hostel 2nd. floor	Water cooler	Blue star	2014	150	1	1
86	Nilgeri Hostel 3rd. floor	Water cooler	Blue star	2015	150	1	1
87	Nilgeri Hostel 4th. floor	Water cooler	Blue star	2015	150	1	1
88	Nilgeri Hostel 5th. floor	Water cooler	Blue star	2015	150	1	1
89	Kanchenjunga hostel						
90	Kanchenjunga hostel G. Floor.	Water dispenser	Blue star	2024	20	1	1
91	Kanchenjunga hostel G. Floor.	Water cooler	Blue star	2014	150	1	1
92	Kanchenjunga hostel Ist. Floor.	Water cooler	Blue star	2014	150	1	1
93	Kanchenjunga hostel 2nd. Floor.	Water cooler	Blue star	2014	150	1	1
94	Kanchenjunga hostel 3rd. Floor.	Water cooler	Blue star	2016	150	1	1
95	Kanchenjunga hostel 4th. Floor.	Water cooler	Blue star	2016	150	1	1
96	Kanchenjunga hostel 5th. Floor.	Water cooler	Blue star	2016	150	1	1
97	Kaveri Hostel	Water cooler	Blue star	2021	150	1	1
98	Sartswati	Water cooler	Blue star	2021	150	1	1
99	Sartswati	Water Dispensor	Blue star	2017	20	1	1
100	Naturopathy						
101	Naturopathy	Water cooler	Blue star	2024	150	1	1
102	Naturopathy	Water cooler	Blue star	2024	150	1	1
103	Ahilyabai Residensy						
104	Ahilyabai Residency	Water cooler	Blue star	2024	150	1	1
105	Ahilyabai Residensy	Water cooler	Blue star	2024	150	1	1
	Total						124

ANALYSIS

It is recommended that the institution establish a regular maintenance schedule for all essential equipment, including pumps, exhaust fans, and IT infrastructure.

Electronic devices such as computers, printers, scanners, and similar equipment that have exceeded their typical operational lifespan (generally 3 to 5 years, depending on the device) should be replaced with newer, energy-efficient models, such as upgraded computers or laptops.

Additionally, maintaining the recommended ambient temperature for all electronic appliances is essential to ensure optimal performance, energy efficiency, and extended equipment lifespan.

8. CAPACITOR BANK

Sl. No.	Identification	Capacity in KVAR
1	Medical Substation	350
2	Medical Substation	550
3	Medical Substation	650
4	Engineering Substation	200

***** END OF THE REPORT ******