

**ENERGY AUDIT REPORT  
FOR  
GEETHANJALI COLLEGE OF ENGINEERING AND TECHNOLOGY  
Cheeryal (V), Keesara (M), Medchal (Dist.),  
Telangana PIN-501301**



**Carried For  
Academic Session  
(2021-2022)**

**Carried Out By**



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**INDEX**

<b>S No.</b>	<b>Description</b>	<b>Page No.</b>
1	Executive Summary	2
2	Chapter - I Introduction	4
3	Chapter - II Acknowledgement	6
4	Chapter - III Process Description & Energy Consumption Details	7
5	Chapter - IV Lighting System	12
6	Chapter - V Motors and Pumps	13
7	Chapter - VI Air Conditioning	14
8	Conclusion	16
9	Photographs	17



## **EXECUTIVE SUMMARY**

Geethanjali College of Engineering & Technology has been structured to take head on the changing trends of technology. The idea of setting up the college emerged when no other college could cater to the needs of a student in his/her endeavor to acquire wholesome education. The very strength of Geethanjali lies in its principles of providing the right learning environment for the student who does not have to compromise throughout the learning process of becoming global citizen.

The college recognizes that the rapidly changing technological landscape would require young technocrats with an understanding of evolving technologies, but also with a global perspective. A major goal of Geethanjali is to impart a uniquely broad and interdisciplinary Engineering education of the highest academic quality. This is achieved through an integrated curriculum that consists of a highly diverse set of technical courses, interdisciplinary research projects, day-to-day interaction with industry, and preparation in entrepreneurship and personality development courses.

At Geethanjali learning pushes all boundaries of conventional thought in pursuit of understanding science in relation to the society. Every concept a Geethanjali acquires carries the inbuilt awareness of how it can be applied to render human life better.

Over the years since it was established, there has been dynamic progress at Geethanjali in all academic and research activities, and a parallel improvement in facilities and infrastructure, to keep it on par with the best institutions in India. The campus epitomizes the Geethanjali motto, "Striving towards perfection" in providing the best of infrastructure and ambience. Geethanjali keeps a keen eye on the current trends and innovations happening in the industry and offers learning methods, which are designed to meet the evolving requirements of the industry.

Electricity is supplied by Southern Power Distribution Company Of TS Limited and for backup powers supply DG Set of 380KVA and 200KVA are available.

Also solar power plant of capacity 250KW is installed in the college.



Elion Technologies and Consulting Pvt Ltd team conducted the Energy audit for academic session 2021-2022. The energy audit was carried out by Narinder Khanna BEE Certified Energy Auditor (EA-1192).

The energy audit included detailed data collection, analysis of data and identification of specific energy saving proposals.



## **CHAPTER – I** **INTRODUCTION**

M/S GCET, Telangana evinced interest in availing the services of Elion Technologies and Consulting Pvt Ltd for conducting energy audit of their premises.

Elion Technologies and Consulting Pvt Ltd team conducted the Energy audit for academic session 2021-2022.

This report is on the energy audit carried out M/S GCET, Telangana. The detailed energy audit comprised of the following activities:

- Data collection of power consuming equipment's.
- A brief session on energy management was conducted to seek more inputs from the personnel engaged in operation and maintenance of electro mechanical services.
- Analysis of collected data.
- Discussion with the officials on the identified proposals.
- Discussion and reporting of the findings of energy audit with the Engineers and management staff.

All the identified energy savings proposals have been discussed with the executives concerned before finalizing the projects.

The contents of the report are based solely on the data provided by GCET, Telangana officials during the energy audit.

The management should implement the suggestions made in the report after verifying requisite safety aspects.



## **Methodology for Energy Audit:**

The following is a list of general procedure and information undertaken during the energy audit:

1. General information of the plant.
2. Baseline energy description.
3. Past energy consumption bills which includes electricity bills.
4. On site data collection
5. Energy analysis of different sectors.
6. Recommendation of energy conservation measures.

The primary goal of the energy audit was to identify sources and areas of potential energy savings and cost saving throughout the Plant by measures of optimization, replacement, retrofitting, and on the other hand, to also provide recommendations on operational and maintenance practices improvements.



## **CHAPTER – II** **ACKNOWLEDGEMENT**

Elion Technologies and Consulting Pvt Ltd places on record it's thanks to M/S GCET, Telangana for entrusting the task of conducting energy audit study.

We acknowledge with gratitude the whole hearted support and cooperation extended by all team members while carrying out the study.



## CHAPTER – III

### PROCESS DESCRIPTION & ENERGY CONSUMPTION DETAILS

#### PROCESS DESCRIPTION

The main areas of energy consumption as observed during the audit are as follows:

- Motors
- Air Conditioner
- Lighting

The main sources of energy to meet the required consumptions are as follows:

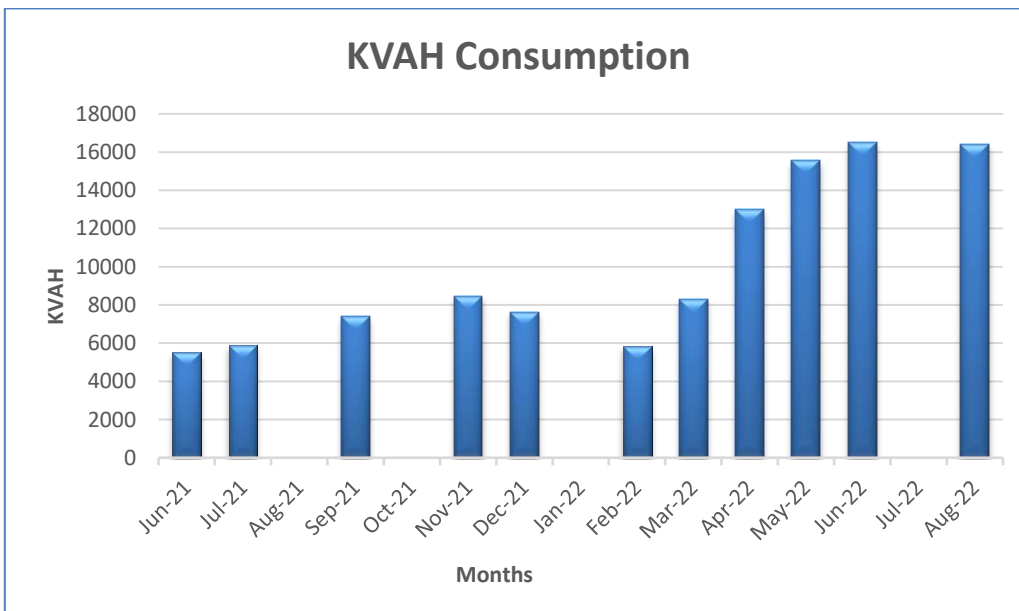
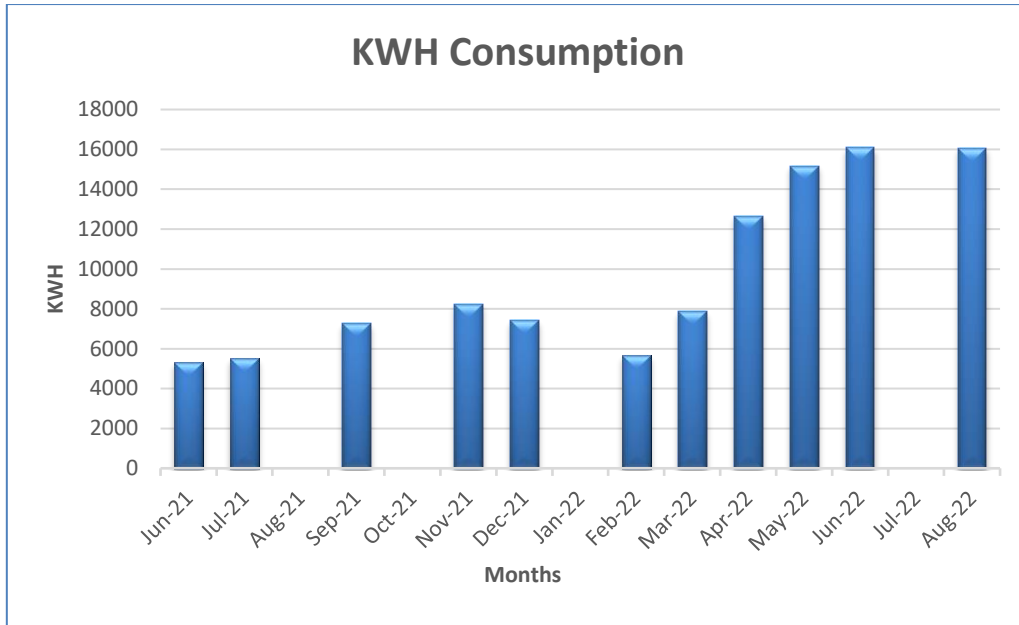
- Electricity supply from Power distribution company
- DG set of 380KVA and 200KVA
- Solar Power Plant of 250KW

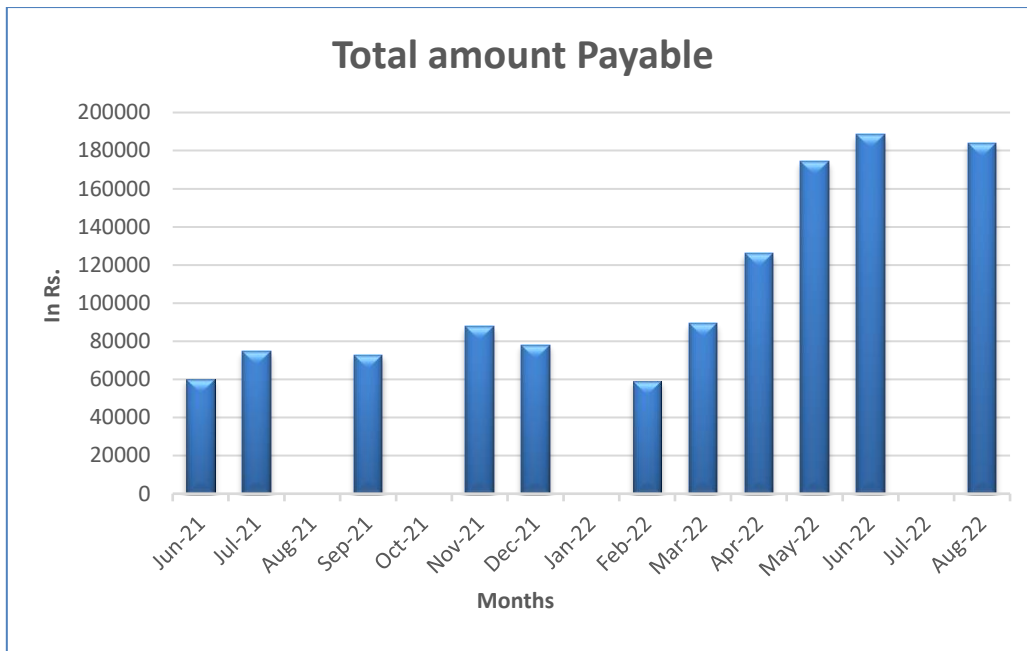
Consumption pattern for energy is given below:

#### ELECTRICITY CONSUMPTION PATTERN

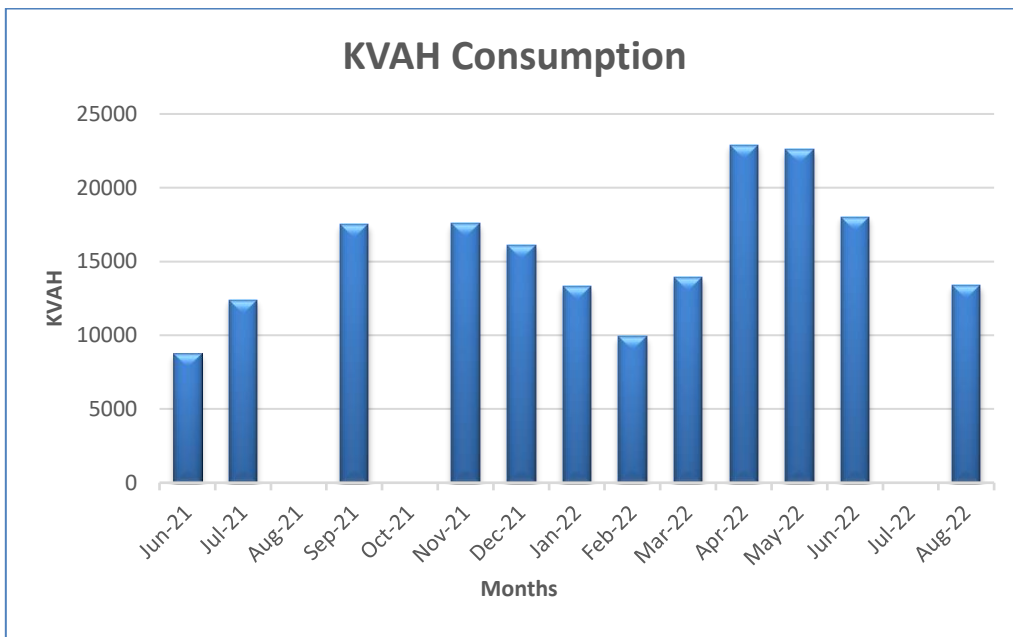
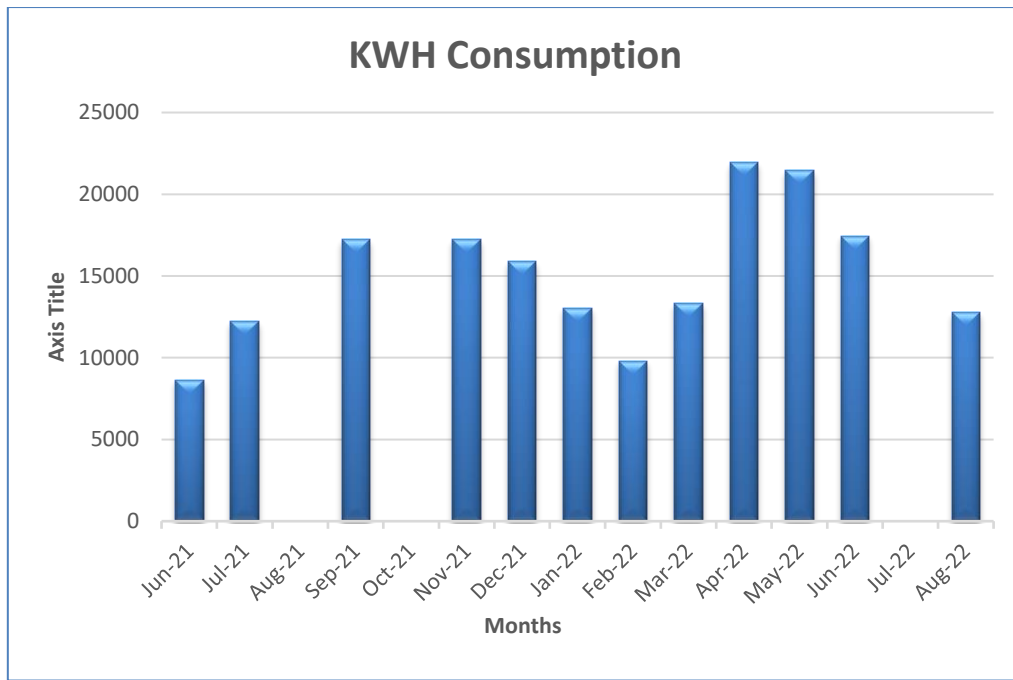
125KVA			
Months	KWH	KVAH	Total amount Payable
Jun-21	5316	5494	60202
Jul-21	5499	5884	74470
Sep-21	7252	7400	72811
Nov-21	8244	8466	87557
Dec-21	7418	7636	78072
Feb-22	5676	5828	59117
Mar-22	7862	8308	89254
Apr-22	12664	13020	126115
May-22	15176	15584	174296
Jun-22	16106	16484	188468
Aug-22	16074	16410	184111

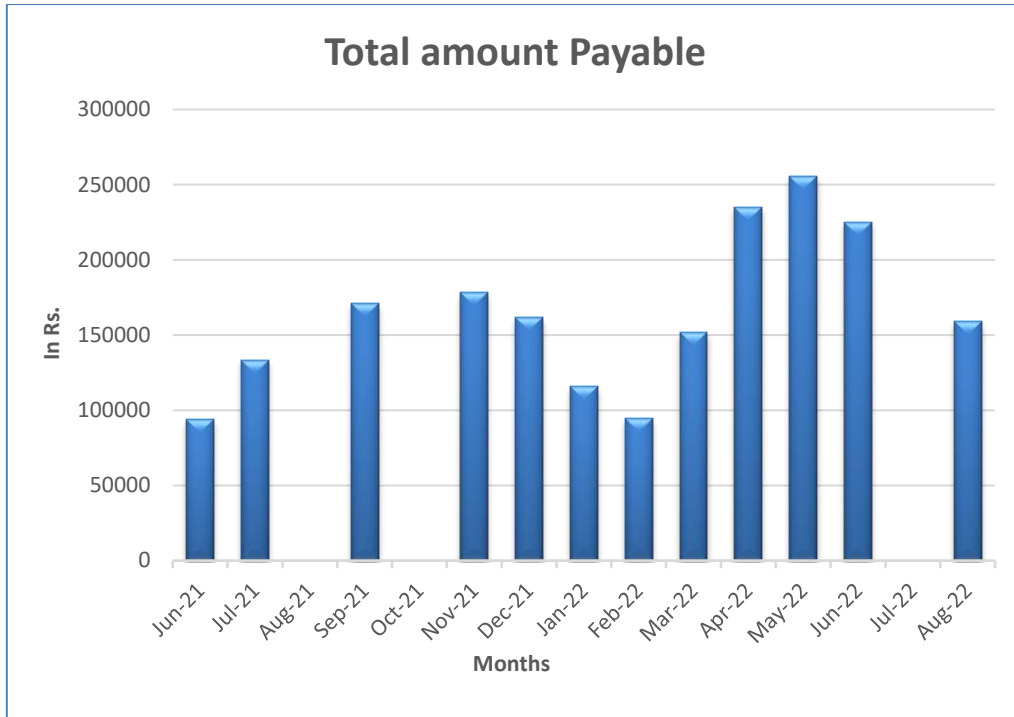






200KVA			
Months	KWH	KVAH	Total amount Payable
Jun-21	8638	8758	93659
Jul-21	12203	12381	133507
Sep-21	17258	17506	170948
Nov-21	17228	17572	178553
Dec-21	15874	16126	161768
Jan-22	13048	13282	115924
Feb-22	9800	9936	94283
Mar-22	13314	13916	151846
Apr-22	21954	22886	235263
May-22	21458	22580	255909
Jun-22	17466	18008	225243
Aug-22	12764	13378	159161





## CHAPTER – IV LIGHTING SYSTEM

The inventory of lighting was collected and following is the summary:

Type- LED/CFL/Conventional -Bulb/Tube Light	Location	Rating	Qty	Number of Hours being turned on
LED	Total College	22 W	300	6
CFL	Total College	18 W	100	6
Conventional -Bulb	Total College	NIL	NIL	NIL
Tube Light	Total College	40 W	900	6
LED TUBE LIGHT	Total College	20 W	700	6
CEILING FANS	Total College	60 W	1600	4

### Observation:

Most of the lighting used are LED. CFL and Tube light are being used in certain location. It was informed that college has planned to replace CFL and Tube light in phased manner with replacement of faulty lights with LED.

### Recommendation:

- Sticker to SWITCH OFF LIGHT and SAVE ENERGY to be displayed.
- CFL and tube lights to be changed to LED.





## CHAPTER – V

### MOTORS AND PUMPS

Pumps are used for pumping of water. The details of the pumps and motors are given below:

#### PUMPS:

Name of Pump and make	Running Hours	Any VFD	Rated Capacity in HP	RPM
Pump-1	6	NA	5	1500
Pump-2	6	NA	5	1500
Pump-3	6	NA	5	1500
RO Water Pump	6	NA	5	1500

#### MOTORS:

Name of Motor and make	Running Hours	Any VFD	Rated Capacity in HP	Efficiency	Ampere	RPM
Motor-1	6	NA	5	90	15	1500
Motor-2	6	NA	5	90	15	1500
Motor-3	6	NA	5	90	15	1500
Motor-4	6	NA	5	90	15	1500
Motor-5	6	NA	5	90	15	1500
Motor-6	6	NA	5	90	15	1500
Motor-7	6	NA	5	90	15	1500
Motor-8	6	NA	5	90	15	1500

#### Observation:

All pumps and motors are functioning properly and well maintained.

#### Recommendation:

Proper maintenance and upkeep of pumps and motors to be done.

## CHAPTER – VI AIR CONDITIONING

Split and Ductable AC’s are used in facility for air conditioning. Temperature maintained is 24°C -25°C which is a good practice. Following is the summary of air conditioners installed:

Type Windows/Split/Package and Location	Capacity in Ton	Whether any star rating available	Set temperature	Running Hours	Whether AC performance is satisfactory Yes/No
Air Conditioners Blue Star- Board Room	2	3	25	6	Yes
Blue Star-Chairman Office	2	3	25	6	Yes
Blue Star-Accounts	1	3	25	6	Yes
Blue Star-Admin	1	3	25	6	Yes
Blue Star Principal Office	2	3	25	6	Yes
Blue Star Exam Branch	2	3	25	6	Yes
Blue Star Placement	1	3	25	6	Yes
Blue Star-Placement	2	3	25	6	Yes
Blue Star-Seminar Hall 2	2	3	25	6	Yes
Blue Star-Seminar Hall 3	2	3	25	6	Yes
Blue Star-Seminar Hall 3	2	3	25	6	Yes
Carrier Air Conditioner-DSP LAB	1	3	25	6	Yes
Carrier Air Conditioner-R&D Lab	1	3	25	6	Yes
Blue Star-Electrical Maintenance	2	3	25	12	Yes
Blue Star-R&D Lab	2	3	25	6	Yes
Blue Star-Seminar Hall 4	2	3	25	6	Yes
Blue Star-Guest Room	2	3	25	6	Yes
Daikin-New Lunch Room	2	3	25	6	Yes
Ductable A/C -Auditorium	5	3	25	6	Yes
Blue Star-Seminar Hall	2	3	25	6	Yes
Blue Star-Server Room	3	3	25	12	Yes

### Observation:

All air conditioners are found to be functioning properly and well maintained.

### Recommendation:

- All doors to be kept closed while using the air conditioners and regular annual service of AC’s should be carried out.



- Set Temperature of Air Conditioner shall be maintained at 24°C. A reduction in 1°C set point temperature, the energy cost comes down by 5%. By carefully selecting the seasonal temperature in different areas as per requirement considerable saving on account of power consumption can be achieved.
- It is recommended to go for 5 star inverter ACs when replacement is done.





## **CONCLUSION**

The energy audit conducted at M/S GCET, Telangana has revealed that GCET is doing good work in having sustainable college. In house solar power plant is installed. The college is sustainable in energy consumption. To further reduce energy consumption, college should implement the recommendation made in report.

## **PHOTOGRAPHS**



**Rooftop Solar Power Plant**



**Rooftop Solar Power Plant**



**200KVA DG Set**