

**ENERGY AUDIT REPORT
FOR
JECRC ENGINEERING COLLEGE & RESEARCH CENTRE
Jaipur**



**Carried On
28th Feb, 2023**

Carried Out By



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EXECUTIVE SUMMARY

The National Society for Education Research and Development (NSERD) was registered in the year 1999 in Jaipur with the major objective of providing quality education and research environment in Rajasthan. It established its first college, Jaipur Engineering College & Research Centre (JECRC) in Jaipur, in the year 2000. Encouraged by its splendid achievements and overwhelming public patronage, it ventured into establishing second college, UDML College of Engineering (which is known as JECRC UDML College of Engineering) in the year 2007.

The JECRC Foundation having 22 years of existence, is amongst the most reputed educational groups in Higher and Technical Education in North India which has 2 large campuses with 10,000 students enrolled as on date in various courses alongside engineering courses, the major chunk of the admissions being routed through JEE examinations. The engineering colleges are approved by the AICTE, New Delhi and are affiliated to the Rajasthan Technical University, Kota. The final year batch size going to complete the graduation in session 2018-2019 is 2123 across all the courses.

JECRC has become the most sought-after institutions for admissions as evident by the REAP admission! Patterns. The JECRC Foundation has now become a brand name in professional education in Rajasthan.

JECRC was established in 2000. The institution started with three branches namely, Computer Science Engineering, Electrical Engineering and Electronics and Communication Engineering, with 180 students. The very next year one more branch introduced Information and Technology. After the introduction of the new branch total intake is increases by 240 students. In 2003, with the addition of Mechanical Engineering intake increased by 60. In 2009, college came up one more branch, Civil Engineering. With this new advancement, the student's sanctioned intake increased to 480. By 2013, second shift for Computer Science Engineering and Mechanical Engineering came into effect and at present the total sanctioned intake of 990 students in all.

The JECRC Foundation, is in its 19th year of existence, is amongst the most reputed educational groups in Higher and Technical Education in North India which has 2 large campuses with 10,000 students enrolled as on date in various courses along with engineering courses, the major chunk of the admissions being routed through JEE examinations.



The JECRC Engineering College is approved by the AICTE, New Delhi and is affiliated to the Rajasthan Technical University, Kota.

Electricity is supplied by Jaipur Vidyut Vitran Nigam Ltd and for backup powers supply DG Set of 200 and 125KVA are available.

Also, solar power plant of capacity 400kW is installed in the college.

On analysis of electricity bill, it was found that JECRC college is producing energy instead of consuming. Total 116756 units have been exported by the college

It can be seen from above data that energy consumed is much less than energy generated.

Elion Technologies and Consulting Pvt Ltd team conducted the Detail Energy audit on 28th Feb, 2023. The energy audit was carried out remotely by Narinder Khanna BEE Certified Energy Auditor (EA-1192).

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



CHAPTER – I **INTRODUCTION**

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

Elion Technologies and Consulting Pvt Ltd team conducted the Detail Energy audit on 28th Feb, 2023.

This report is on the energy audit carried out M/S JECRC, Jaipur. 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 JECRC, Jaipur 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 include 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 JECRC, Jaipur 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:

- Pumps
- 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 200KVA and 125KVA
- Solar Power Plant of 400kW

Consumption pattern for energy is given below:

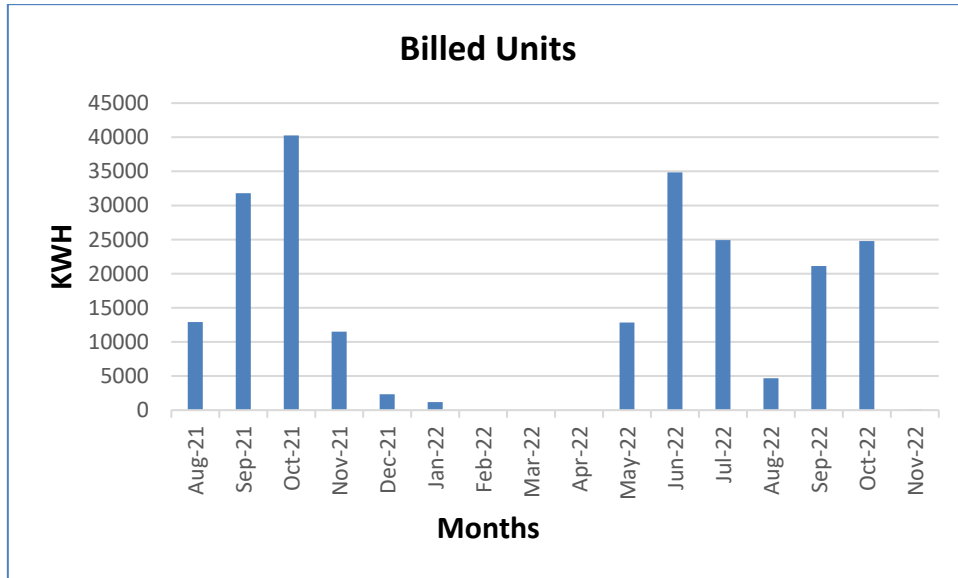
ELECTRICITY CONSUMPTION PATTERN

Months	Billed Units	Units Export
Aug-21	12911.00	0.00
Sep-21	31800.77	0.00
Oct-21	40258.40	0.00
Nov-21	11494.19	0.00
Dec-21	2325.74	0.00
Jan-22	1190.30	0.00
Feb-22	0.00	5903.30
Mar-22	0.00	8272.50
Apr-22	0.00	5126.00
May-22	12834.10	0.00
Jun-22	34842.20	0.00
Jul-22	24916.50	0.00
Aug-22	4675.80	0.00
Sep-22	21125.90	0.00
Oct-22	24792.10	0.00
Nov-22	67.00	0.00



Total	223234.00	19301.80
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Average KWH consumption of JECRC for given billed months is 13952.125KWH



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	BLOCK -A	15 W	60	5
		22 W	60	6
		40 W	10	5
		100 W	65	6
	BLOCK -B	22W	40	5
	BLOCK -C	10 W	50	6
		22 W	60	7
		40 W	10	5
	BLOCK -D	22 W	250	
		40 W	300	
	BH-I	15 W	15	10
		20 W	20	9
		40 W	10	9
		BH-II	20 W	15
	GH	20 W	40	9
CFL	BLOCK -A	18 W	60	5
		36 W	70	6
	BLOCK -B	36 W	70	6
	BLOCK -C	18 W	40	5
	BLOCK -E	18 W	40	5
TUBELIGHT	BLOCK -A	36 W	250	3
		40 W	100	4
	BLOCK -B	36 W	580	3
	BLOCK -C	36 W	600	4
	BLOCK -E	36 W	100	3
	BH-I	36 W	120	6
	BH-II	36 W	180	7
	GH	36 W	120	7

Observation:

The majority of the lighting is LED. In some places, CFL and tube lighting are used. It was revealed that the college intends to replace CFL and Tube lights in stages, with problematic lights being replaced 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 **PUMPS**

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

PUMPS:

- 5 HP – Submersible Pump of depth 400 feet at Main Gate
- 5 HP – Submersible Pump of depth 500 feet in Garden of Girls Hostel.
- 3 HP – Submersible Pump of depth 500 feet in D block.
- 5 HP – Submersible Pump of depth 200 feet in C block (Library).

Observation:

All pumps and motors are functioning properly and well maintained.

Recommendation:

Proper maintenance and upkeep of pump to be done.



CHAPTER – VI **AIR CONDITIONING**

Windows and Split an AC's are used in facility for air conditioning. Temperature maintained is 27°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
Air Conditioner-Window/BLOCK -A-15	2	3	27	7
Air Conditioner-Split/BLOCK -A-40	2	3	27	7
Air Conditioner-Package-BLOCK -A-3	10		27	7
Air Conditioner-Window/BLOCK -B-9	2	3	27	7
Air Conditioner-Split/BLOCK -B-10	2	3	27	7
Air Conditioner-Window/BLOCK -C-20	2	3	27	7
Air Conditioner-Split/BLOCK -C-22	2	3	27	7
Air Conditioner-Split/BLOCK -D-3	2	3	27	8
Air Conditioner-Split/BLOCK -E-6	2	3	27	8
Air Conditioner-Window/BH-I-1	2	3	27	9
Air Conditioner-Split/BH-I-5	2	3	27	9
Air Conditioner-Window/BH-II-1	2	3	27	9

Observation:

All of the air conditioners were confirmed to be in good working order and were carefully maintained.

Recommendation:

All doors to be kept closed while using the air conditioner and regular annual services of AC should be carried out.



CONCLUSION

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

PHOTOGRAPHS



LED Light



Lights



DG Set



Latitude: 26.781805
Longitude: 75.82236
Elevation: 367.07±6 m
Accuracy: 35.3 m
Time: 23-02-2023 13:24
Note: JECRC JAIPUR

DG Set