AM GREEN
RECYCLING

Certificate of Appreciation

This certificate is presented to

Dronacharya College of Engineering

Khentawas, Farrukh Nagar, Gurugram, Haryana

for demonstrate commitment paper waste recycling by becoming

A

AM GREEN RECYCLING

GREEN PARTNER (2022-23)

For AM GREEN RECYCLING

AG/2023/01

MD AKHTAR

Proprietor

Certificate No

Signature

Plot No 93, Sikandarpur, MG Road, Gurugram, Haryana 122002

Asha

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AG/2024/03

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Energy Audit Report of

Dronacharya College of Engineering

KHENTAWAS, FARRUKH NAGAR, Gurugram, Haryana 123506

Conducted by

Tetrahedron Manufacturing Services

G-7, near Hindi Khabar, G Block, Sector 63, Noida, Uttar Pradesh 201307

Call: 089841 89814

Email: - tms@tetrahedron.in

https://www.tetrahedron.in/

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Date: May 25, 2024

DISCLAIMER

This report is based on the information provided by the management of **Dronacharya College of Engineering** & on-site observations on specific dates. We certify that this information and following analysis is correct to the best of our knowledge and ability. The validity of the recommendations is dependent on the accuracy of log books and historical data supplied to us. This report (including any enclosures and attachments) has been prepared for the exclusive use and benefit of the addressee(s) and solely for the purpose for which it is provided. Unless we provide express prior written consent, no part of this report should be reproduced, distributed or communicated to any third party. We do not accept any liability if this report is used for an alternative purpose from which it is intended, nor to any third party in respect of this report. The recommendations and findings are to be used by client at their own accord and Tetrahedron Manufacturing Services or its associates would not be responsible for any material or non-material losses (if any) occurring in any way due to their implementation

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List of Abbreviations

ECM : Energy Conservation Measures
kWh : kilo Watt hour
kVAh : kilo Volt Amp Hour
LT : Low Tension
HT : High Tension
MT : Metric Ton
MTOE : Metric Ton Oil Equivalent
kW : Kilo Watt
SEC : Specific Energy Consumption
SPC : Specific Power Consumption
TPH : Tons Per Hour
VFD : Variable Frequency Drive
DOL : Direct on Line
Yr. : Year
Kg : Kilo Gram
W : Watt
C : Celsius
kVA : kilo volt Amp
V : Volt
I : Current
P : Power

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B. ACKNOWLEDGEMENT

Energy Audit Team of **Tetrahedron Manufacturing Services Pvt Ltd.** Expresses Our Sincere Gratitude to Management of **Dronacharya College of Engineering**, for providing us an opportunity to conduct an energy audit of their organization located In Khentawas, Farrukh Nagar, Gurugram, Haryana 123506. We are grateful to K.K Dahiya, Devendra Kumar, Mr. Sravan and other officials for showing keen interest in the study and for the help and cooperation extended to Energy Audit Team during study.

We do hope that you will find the recommendations given in this report useful in helping you save energy. While we have made every attempt to adhere to high quality standards, in both data collection and analysis, as well as in presentation through the report, we should welcome any suggestions from your side as to how we can improve further.

In case of any suggestions or queries:

Tetrahedron Manufacturing Services

Nitin Kumar - Director

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C. EXECUTIVE SUMMARY

Energy is one of the major inputs in any facility and is the mainstay of the economic development of the country. Rising Electricity & fuel costs coupled with increased global competition is forcing players to slash the energy costs. Energy Audit helps in energy cost optimization, pollution control, safety aspects and suggests the methods to improve the operating & maintenance practices of the system. It is instrumental in coping with the situation of variation in energy cost availability, reliability of energy supply, decision on appropriate energy mix, decision on using improved energy conservation's, equipment's and technology.

Energy conservation is a continuous process and there is always scope for further improvements, with this objective the Energy Audit team with the active involvement of **Dronacharya College of Engineering** have identified the following energy conservation opportunities (ECO's) implementation of ECO's can further help reducing energy consumption.

Highlights

Table01: - Energy Usage Highlights

Description	Units	Values
Annual electricity consumption	Units	251706
Annual electricity cost/annum	INR	2956364

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Table02: - Summary of Energy Conservation Measures

Sr. No	Energy Conservation Measures	Annual Saving		Investment	Payback Period
		kWh	INR	INR	Years
1	Replace conventional ceiling fan with energy efficient fan	33089	406996	1285080	3.2
2	Replace conventional tube with energy efficient tube	11373	139889	85050	0.6
3	Replace conventional CFL bulb with energy efficient LED bulb	701	8621	10620	1.2
4	Replace LCD monitor with LED monitor	108900	1339470	3300000	2.5
5	Replacement of old pumps with energy efficient pumps	9900	121770	60000	0.5

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D. INTRODUCTION

OBJECTIVE OF ENERGY AUDIT:

Energy audit is the key to a systematic approach for decision-making in the area of energy management and gives a positive orientation to the energy resource cost reduction. The primary objective of the energy audit is to determine ways to reduce energy consumption to lower operating costs.

The Energy audit is conducted with the following Objectives:

1. Detailed studies of the intended energy consuming equipment including historical and present energy performance trends
2. Quantification of Energy Losses, and Energy Saving Potential
3. Presentations of Energy Efficiency Measures with cost benefit analysis
4. Identifying potential areas of electrical energy economy.

This energy audit assumes significance due to the fact that the Dronacharya College of Engineering, total ***electricity bill crossed INR. 29 Lakhs from Apr,23 to Mar,24*** and it was aimed at obtaining a detailed idea about the various end use energy consumption activities and identifying, enumerating and evaluating the possible energy savings opportunities.

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ABOUT AUDIT TEAM MEMBERS:

We have dedicated an expert team for services. Your first point of contact with Tetrahedron Manufacturing Service will be with our dedicated customer services team. We are highly skilled, motivated and fully trained to assist you. Our services team includes our expert, highly experienced advisors for power factor correction systems, harmonic filter and others Energy and Power Quality problems who have over 40 years combined experience for the same. Each team member is dedicated to offering a high level of customer care and also strives for excellence to ensure that you receive the perfect service

METHODOLOGY OF WORK:

The methodology adopted for this audit was

- A preliminary energy audit has been conducted to establish the energy consumption of the organization by analysing the available past energy consumption data, identification of the areas requiring more detailed study and measurements.
- Visual inspection and data collection.
- Identification/verification of energy consumption and other parameters by measurements.
- Computation and in-depth analysis of the collected data, including utilization of computerized analysis and other techniques as appropriate were done to draw inferences and to evolve suitable energy conservation plan/s for improvements/ reduction in specific energy consumption.
- Potential energy saving opportunities
- Flow Chart for Methodology for report preparation

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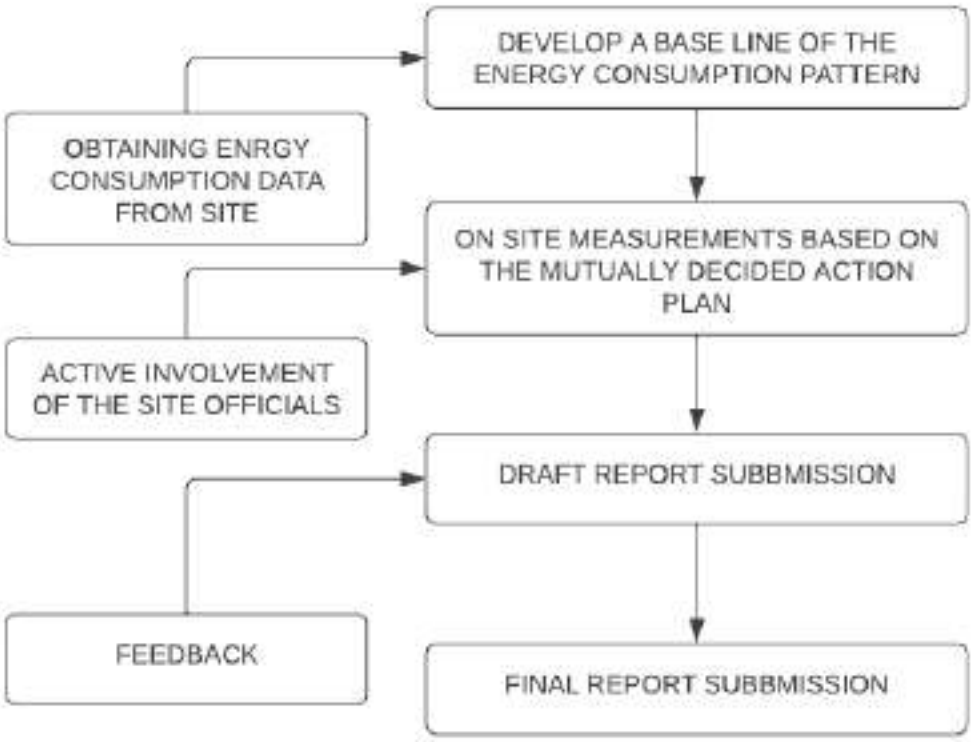

Figure 1 Energy Audit Flowchart

This report is just first step, a mere mile marker towards our destination of achieving energy efficiency and we would like to emphasize that an energy audit is a continuous process. We have compiled a list of possible actions to conserve and efficiently utilize our scarce resources and identified their savings potential.

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1. Energy and Utility System Description

Major utilities in the campus are

1. **General**
2. **Electrical**

1.1 Brief Description of each Facility

This study is being done under the indicative scope of work for conduct of Energy Audit specified by Dronacharya College of Engineering. This study is mainly carried out to identify saving areas in Dronacharya College of Engineering with short term, medium term & long-term investments, yielding significant savings. The study can be mainly divided into following groups.

2.1.1 General

Energy Audit focuses on study of correlation of electricity consumption on production. Opportunities for load factor improvement, power factor improvements, etc.

b. Electrical

It includes motor load study of 1 HP & above by measuring input parameters (Voltage, Current, P.F., & kW), performance analysis of water pumps having capacities above 1 HP, performance analysis and identification of energy efficiency opportunities in motors, pumps, air compressors, lighting, etc.

1.2 Instrument Used

Following instruments are used for the study:

a. 3 Phase Power Analyzer-Fluke 1736
b. Lux Meter
c. Measuring tape
d. Thermal imager
e. Ultrasonic Water flow meter
f. Power Clamp
g. Distance Meter
h. Hygrometer
i. Others as required

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Power Quality Analyzer

Thermal Imager

UE System (Leak Detect System)

Anemometer

Ultrasonic
Flow Meter

LUX System

Pressure Gauge

Hygrometer

Distance Meter

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TDS Meter

Flu Gas Analyzer

Clamp Meter

Figure 2 Energy Audit Equipment

1.3 Energy Audit Team

Pratosh Saxena – Energy Auditor TMS
Nayan Kumar – Senior Energy Consultant TMS
Sushanta Bhattaray – Energy Consultant TMS

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2. Description and Energy Consumption

2.1 About Dronacharya College of Engineering:

Dronacharya College of Engineering, Best Engineering College in Delhi NCR are absolutely committed to serve the society and improve the mode of life by imparting high quality education in the field of Engineering and Management catering to the explicit and implicit needs of the students, society, humanity and industry. 'Shiksha evam Sahayata' i.e. Education and Help are the two words etched on our banner soaring higher year after year.

The Dronacharya College of Engineering in Gurugram, Delhi NCR was established in the year 1998. It has been accredited by AICTE and affiliated with Gurugram University and is NAAC-accredited, which is ranked 91 in India. It is a premier institute for engineering, technology, and management education. The campus is spread over 10 acres. located near the Gurugram metro station, the Dronacharya College of Engineering Gurugram is one of the best colleges in the city.

Faculty and Facilities of Dronacharya College of Engineering: -

The faculty and facilities of Dronacharya College of Engineering Gurugram are excellent. The infrastructure here is world-class, resulting in an ideal academic environment. The college is equipped with a well-equipped auditorium with a seating capacity for 450+ students. The facility also features an audio-visual room with an LCD projector, a computer lab, internet connectivity, and air-conditioned classrooms. It has been authorized as a test centre by various firms to help its graduates land jobs. it has a large library and a cafeteria for students to dine in.

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The institute also has an air-conditioned auditorium. In addition, the campus is beautifully landscaped, with many trees and open spaces for recreational activities. The college offers various scholarship schemes. The Robotics and Automation lab provides an environment where students can explore autonomy in manufacturing systems.

The campus is equipped with a computer lab for students and teachers, and sports facilities for sports, cultural events, and community service. The campus has modern teaching facilities and large playgrounds for the students. It also provides excellent technical education. The college has a great atmosphere.

Campus and Hostel Life in Dronacharya College of Engineering: -

The college provides hostel accommodation for both male and female students. Its hostel is spacious and equipped with all the facilities. It also has free Wi-Fi connectivity for students and teachers. The hostel has good food and proper cleaning facilities.

Students from different parts of the country live in college hostels. The students are provided with hygienic food, a recreation room, indoor games, and the Internet. The girl's hostel mimics an academic environment and is free from ragging. The campus is beautifully landscaped and provides ample green space for a healthy environment. The college has separate wardens for boys and girls.

Vision: -

To impart Quality Education, to give an enviable growth to seekers of learning, to groom them as World Class Engineers and Managers competent to match the expanding expectations of the Corporate World has been our ever-enlarging vision

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extending to new horizons since the inception of Dronacharya College of Engineering.

Campus Life: -

"A thriving residential campus and community of creative and accomplished people from around the world". Life at DCE blends research and reflection, the scientific with the artistic, and the scholarly with the athletic. Our students come from different places and backgrounds, but together they create a diverse and kinetic community that seeks to create a better world.

Table03: - College Details

College Details		
No	**Particulars**	**Details**
1	Name of the College	Dronacharya College of Engg.
2	Address	Vill: - Khantawas, Farukhnagar, Haryana
3	Contact Person	Mr. Hansraj Yadav
4	Contact Phone number	9910380110
5	E-mail	registrar@ggnindia.dronacharya.info
6	Web site	https://ggnindia.dronacharya.info/
7	Type of Building	Educational Institute
8	Annual Working Days	Approx 275
9	No: of Shifts	1
10	No: of students enrolled	2000
11	No: of teaching staff	140
12	No: of non-teaching staff	90
13	No: of departments	13
14	No of UG courses	9
15	No: of PG courses	4
16	Total campus area	10.4 acre
17	Total Built Up area	28465 m^2
18	No: of hostel students	1
19	No: of plants in college	More than 5000
20	Grounds and stadiums	1

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2.2 Annual Energy Consumption

Electricity

Dronacharya College of Engineering is receiving electricity from DHBVN (Dakshin Haryana Bijli Vitran Nigam) Contract demand with DHBVN is 400 KW.

3. Energy Scenario

3.1 Electrical Systems

3.1.1 Electrical bill analysis

Dronacharya College of Engineering is getting electricity supply from DHBVN (Dakshin Haryana Bijli Vitran Nigam) Major portion of the energy consumption is used for academics and hostel.

The observations made during the study are given in the following sections.

The Tariff Structure at the college

Tariff structure of the facility is given below

• Tariff Category	HTS-NDS
• Supply voltage	11 kV
• Contracted demand	400 kW
• Demand charges	165 per kW
• TOD	Not Opted
• Unit charge	6.65/kVAh

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1. **Power factor (PF)**

It shall be the responsibility of the HT Consumer to determine the capacity of PF correction apparatus and maintain an average PF of not less than 0.76.

Maximum power factor = 0.89

Minimum power factor = 0.62

Average power factor = 0.76

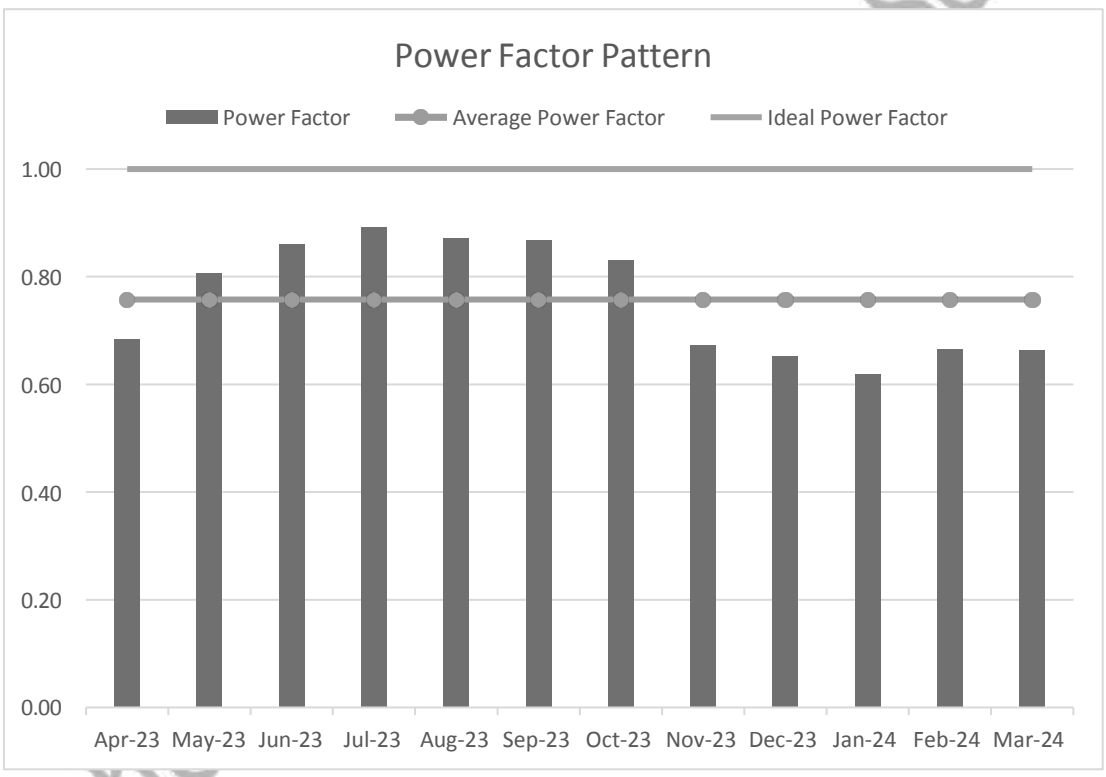

Figure 3 Power Factor

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2. **Time of Day Tariff**: - Not opted

TABLE 04: - Electrical Bill analysis

Month	Contract Demand (kVA)	Billed Demand (kVA)	Units(kWh)	Units (kVAh)	Power Factor	Nominal Unit Rate (INR)	Fixed Charges	Energy Charges	Municipal Tax	Electricity Duty	Surcharge	Billed Amount (INR in Lakhs)
Apr-23	400	407.7	10122	14810	0.68	6.65	67266	98487	3315	1012	2486	173175
May-23	400	394.5	17430	21586	0.81	6.65	65096	143547	4173	1743	2741	193605
Jun-23	400	407.7	23710	27524	0.86	6.65	67266	183034	5006	2371	3726	265429
Jul-23	400	394.5	24088	26990	0.89	6.65	65096	179484	4892	2409	3640	256110
Aug-23	400	407.7	24918	28582	0.87	6.65	67266	190070	5146	2492	3831	269415
Sep-23	400	407.7	23328	26862	0.87	6.65	67266	178633	4918	2333	3660	257419
Oct-23	400	394.5	20090	24160	0.83	6.65	65096	160664	4515	2009	3357	236231
Nov-23	400	407.7	13104	19482	0.67	6.65	67266	129555	3936	1310	6173	425496
Dec-23	400	394.5	10422	15962	0.65	6.65	65096	106147	3424	1042	1042	176300
Jan-24	400	407.7	9522	15376	0.62	6.65	67266	102250	3390	952	5168	358515
Feb-24	400	407.7	11268	16910	0.67	6.65	67266	112452	3594	1127	2667	187715
Mar-24	400	368.2	8950	13462	0.66	6.65	60756	89522	3006	895	2225	156954
Average	400	400	16413	20975	0.76	6.65	66000	139487	4110	1641	3393	246364

Observation:

1) Maximum consumption 28582 kVAh in month of August-2023 and minimum 13461.92 kVAh in month of March-2024.

2) The average energy consumption is 20975 kVAh.

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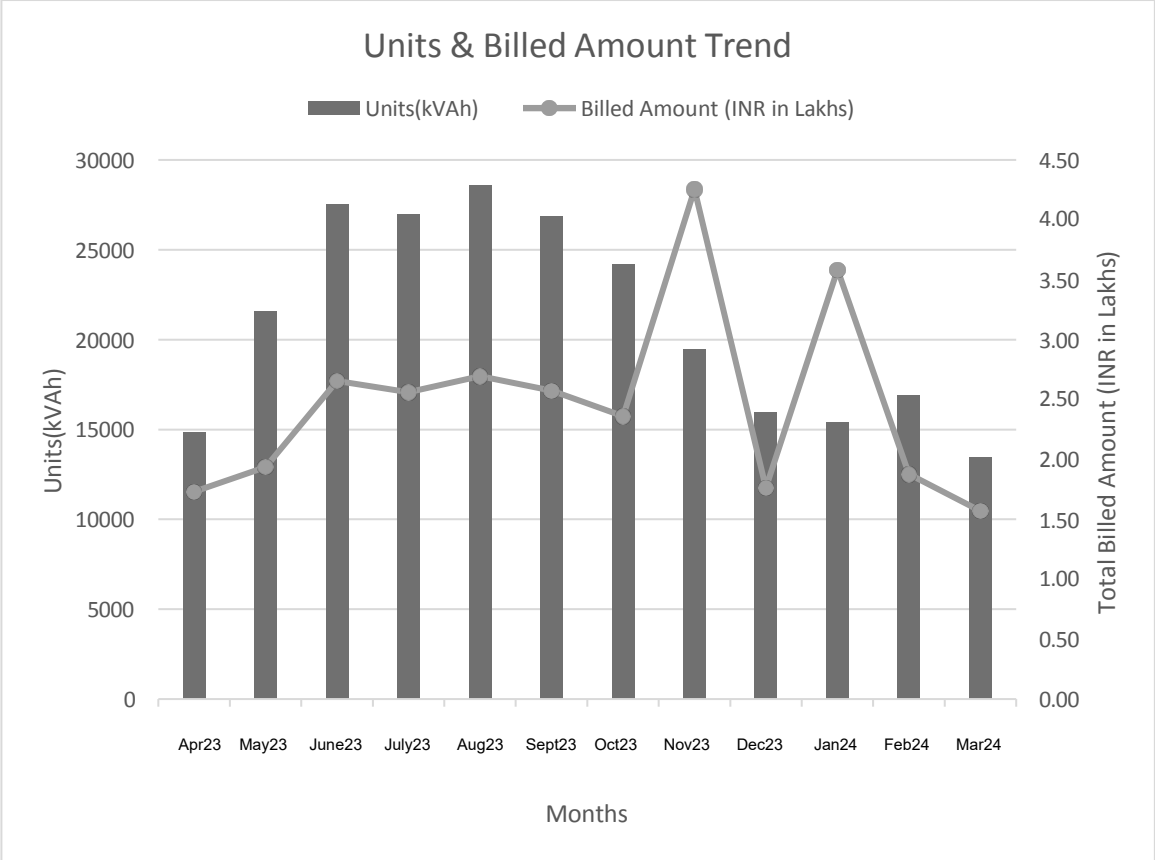

Figure 4 Units & Billed Amount Trend

Observation:

1) In Aug-22 Billed amount is maximum.

2) In Mar-23 Billed amount is minimum.

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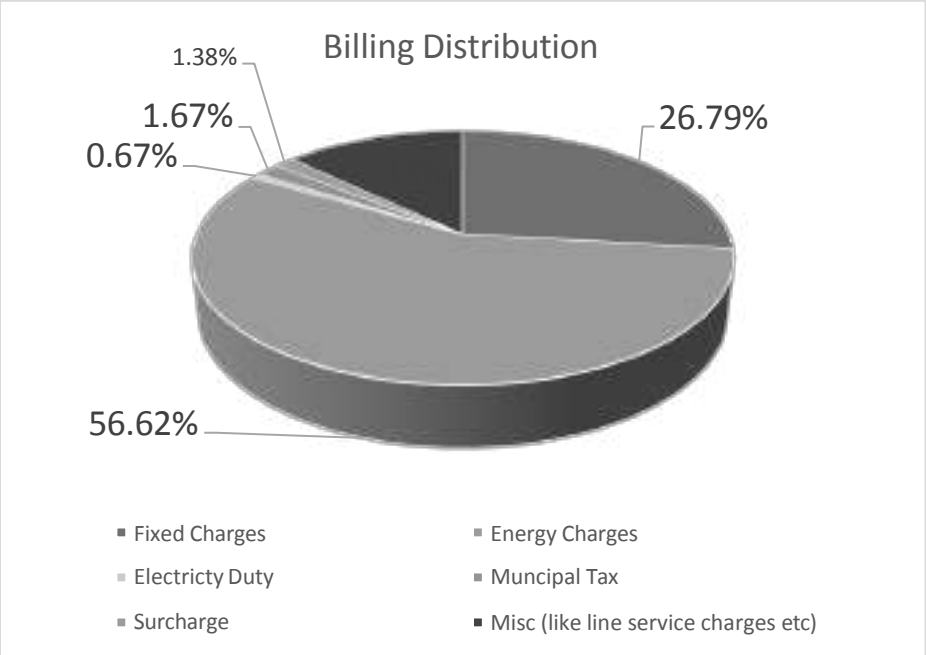

Figure 5 Billing Distribution

Observation:

1) Energy Charges are 56.62% of total bill

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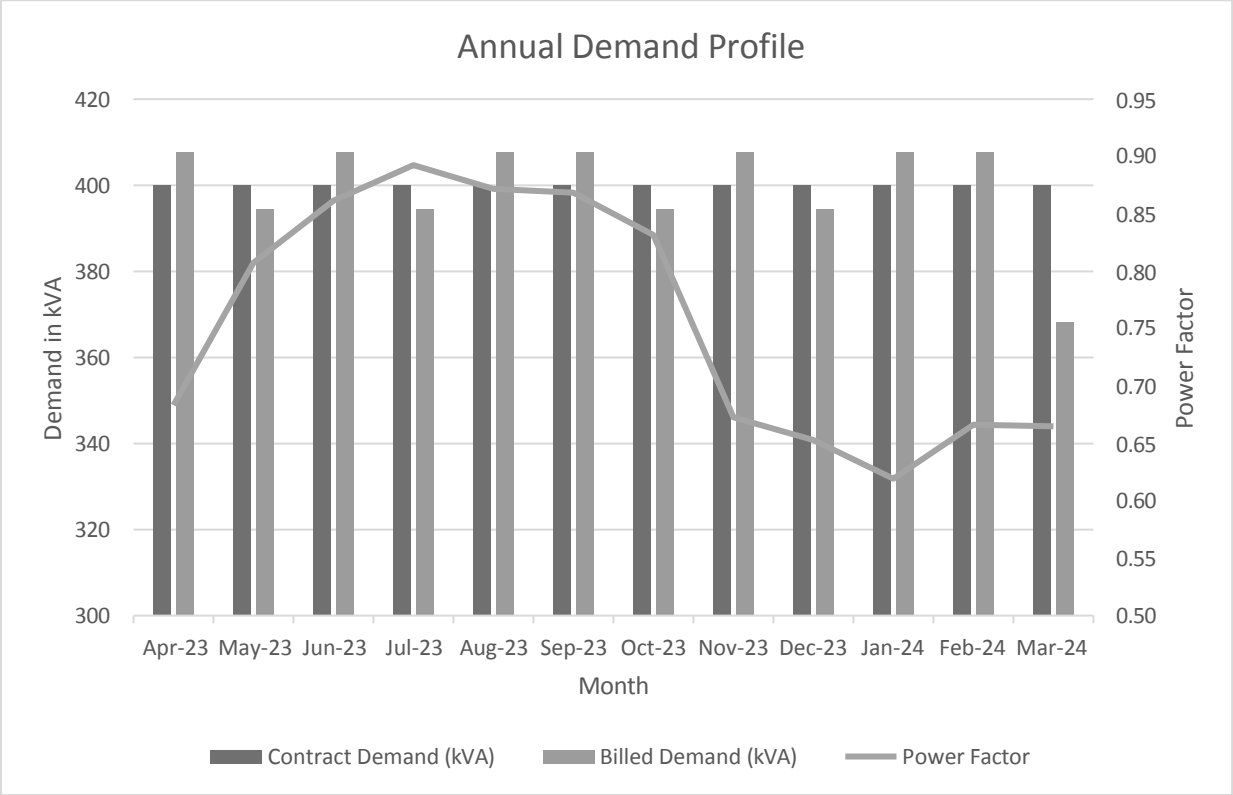

Figure 6 Annual Demand Profile

Observation:

1) Power Factor is Minimum for Jan-23.

2) Demand is nearly 400 kVA

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3.1.2 Diesel Generator

Following table shows the details of DG set.

Table05: - DG Set Details

Sl. No	Make	Capacity in KVA	Avg Running Duration/day in hrs	kW	kWh	Diesel/hr in ltrs	Cost of Diesel/Ltr in Rs	Total Cost/day
1	Kirloskar	500	2	400	800	70	90	12600
2	Kirloskar	250	2	200	400	23	90	4140
3	Kirloskar	62	2	49.6	99.2	12	90	2160

Recommendations:

1. Conversion of DG sets to Dual Fuel System
2. Use of Natural Gas with Diesel will reduce the diesel cost by at least 30%
3. GHG emissions will reduce by a minimum of 20%

After Implementing Dual Fuel System:

Table06: - DG Set Dual Fuel System

Sl. No	Make	Capacity in KVA	Avg Running Duration/day in hrs	kW	kWh	Diesel/hr in ltrs	Cost of Diesel/Ltr in Rs	Total Cost/day
1	Kirloskar	500	2	400	800	49	90	8820
2	Kirloskar	250	2	200	400	16.1	90	2898
3	Kirloskar	62	2	49.6	99.2	8.4	90	1512

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3.2 Water Pump

The performance analysis of the pumps used for water required for the institute is done based on the present operating parameters like water flow, head and power. Pumps of different capacities are installed based on the water flow requirement at different sections of the college. The water supply of the institute is met by river and bore well. There are number of pumps are running mainly in the institute campus.

Table07: - Pump Table

Pump Table				
Description	**Units**	**Pump at the back of admin building**	**Pump at the corner of admin building**	**Pump at front gate of admin building**
Design parameter				
Rated output	hp	7.5	7.5	7.5
	kW	5	5	5
Method of starting		Star-Delta	Star-Delta	DOL
Pump Efficiency	%	65	61	58
Motor Efficiency	%	92	92	86
Measured Parameter				
Voltage	Volts	415	416	412
Current	Amps	8.11	8.18	7.98
Power Factor		0.85	0.86	0.83
Flow Rate	m^3/hrs	107.6	106.54	78.26
Diff Pressure	kg/cm^2	0.92	0.87	0.65
Calculated Parameter				
Power	kW	4.96	5.07	4.73
System Efficiency	%	54.4	49.8	29.3
Age	Years	2.5	~3	~8

Observation:

1) Pump at the front gate of admin building has less efficiency than other pumps, which is about 30%.

2) One pump has age of about 8 years while other pump has about 2.5 years. The pump which has more age i.e.,8 years have less efficiency.

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3.3) Air Conditioning

Table08: - AC Details

Sl NO	Name of Location	1.5 Ton	2 Ton	Star Rating
1	Auditorium		2	****
			2	***
2	Computer Centre		1	*****
			1	****
			2	***
3	Library		1	****
			3	***
4	Seminar Hall	1		*****
		7		****
		4		***
5	Laboratory	17		*****
		43		****
		6		***

ACs Data

Observation:

1). 19 ACs are 5 stars rated, 54 ACs are 4 star rated & 17 are 3 stars rated.

2). Although many of ACs are 5 stars rated but as per BEE guidelines, 5 Star rated ACs will be considered as 4 stars rated effective from 1st July,2023

3). 3 stars rated ACs should be replaced as soon as possible

4). ACs set temperature should be 24 degree C for human comfort as well as energy consumption point of view.

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3.4 Lighting System

Lighting is provided in commercial buildings, indoor and outdoor for providing comfortable working environment. The primary objective is to provide the required lighting effect for the lowest installed load i.e. highest lighting at lowest power consumption. There are number of buildings in Campus.

Table09: - Source Details

SI NO	Type of Source	No of source	Each Wattage
1	T12	332	28
2	T8	298	40
3	CFL/Incandescent bulb	177	12
Total		807	

3.5 Fan Data

Majority of the fans are traditional type fans that consume more energy. Now in the market advanced BLDC type fans are available which consumes less energy and available advanced feature regulators

Table10: - Fan Details

SI NO	Name of Location	No of Fan
1	Classroom	224
2	Computer Centre	8
3	Laboratory	456
4	Seminar Hall	72
5	Tutorial Room	32
6	Workshop	12
Total		804

4. Energy Conservation Measures

4.1 Replacing the Conventional fan with energy efficient fan

Recommendations:

These fans should be replaced with BLDC type fans, their ROI is around 5 yrs. as for all replacement a huge capital sum is involved so recommendations are to go in a phase wise manner.

Saving Potentials:

Table11: - Fan Replacement Savings

Fan Replacement Savings					
Description	**Units**	**Value**	**Value**	**Value**	**Value**
Present system					
Type of fan		**Ceiling fan**	**Wall fan**	**Pedestal fan**	**Exhaust fan**
Number of existing fans	Nos	647	62	9	86
Wattage /fan	Watt	65	65	65	65
Usage of fan per day	Hrs	8	8	8	8
Working days per annum	Days	275	275	275	275
Annual Energy consumption	kWh	92521	8866	1287	12298
Proposed system					
Recommended for replacement	%	50%	50%	100%	50%
Recommended of EE fan	Nos	324	31	9	43
Wattage of EE fan	watt	28	28	28	28
Annual Energy consumption	kWh	19928	1910	554	2649
Annual Power saving	kWh	26333	2523	733	3500
Energy tariff	INR	12.3	12.3	12.3	12.3
Monitory saving	INR	323895	31038	9011	43052
Investment/fan	INR	2800	5440	5440	3760
Total investment	INR	905800	168640	48960	161680
Simple Payback period	Years	2.8	5.4	5.4	3.8

4.2 Replacing the Old Tube with LED tube

Findings:

Current existing tube light consumes 40 W which is replaced by LED tube.

Recommendations:

Replace the current tube light with LED tube which consumes less energy.

Table12: - Current lighting with LED tube

Current lighting with LED tube			
Description	**Units**	**Value**	**Value**
Present system			
Type of tube		28 w	40 w
Number of existing tube lights(T12/T8)	Nos	332	298
wattage /tube	watt	28	40
Total wattage	Watt	9296	11920
Daily usage	Hrs/day	8	8
Annual working days	days/yr.	275	275
Annual Energy consumption	kWh	20451	26224
Proposed system			
Recommended for replacement	%	60%	60 %
Recommended of LED tube light	Nos	199	179
Wattage of LED tube light	Watt	20	20
Annual Energy consumption	kWh	8764.8	7867
Annual Power saving	kWh	3505.9	7867
Energy tariff	INR	12.3	12.3
Monitory saving	INR	43123	96767
Investment/LED tube light	INR	225	225
Total investment	INR	44820	40230
Simple Payback period	Years	1.04	0.4

4.3 Replacing the old bulb with LED bulb

Findings:

Current existing old CFL bulb consumes maximum 12 W which is replaced by LED bulb.

Recommendations:

Replace the current old bulb with LED bulb which consumes less energy.

Table13: - Current OLD bulb with LED tube

Current OLD bulb with LED tube		
Description	**Units**	**Value**
Present system		
Number of existing CFL/Incandescent bulb	Nos	177
wattage /tube	watt	12
Total wattage	Watt	2124
Daily usage	Hrs/day	8
Annual working days	days/years	275
Annual Energy consumption	kWh	4672.8
Proposed system		
Recommended for replacement	%	60 %
Recommended of LED tube light	Nos	106
Wattage of LED tube light	Watt	9
Annual Energy consumption	kWh	2103
Annual Power saving	kWh	701
Energy tariff	INR	12.3*
Monitory saving	INR	8621
Investment/LED tube light	INR	100
Total investment	INR	10620
Simple Payback period	Years	1.2

* Although base price is INR 6.65/unit but after considering all charges, average unit cost for the last 1 year was found to be INR 12.29/unit

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.4 Water Pumping System

Findings:

The submersible pump is use to supply the water for institute are more than 5 years old & power consumption of the pump is more than rated.

Recommendations:

Replace the existing pump with Energy Efficient water pump.

Table14: - Pump Replacement

Pump Replacement		
Description	**Units**	**Pump at front gate of admin building**
Design parameter		
Rated output	hp	7.5
	kW	5
Method of starting		DOL
Pump Efficiency	%	58
Type		Submersible
Measured Parameter		
Proposed Power	kW	4.5
Daily Usage	Hrs/day	8
Annual Working Days		275
Annual Power Savings	kWh	9900
Energy Tarif	INR/kWh	12.3
Monetary Savings	INR	121770
Total Investment	INR	60000
Simple Payback Period	Years	0.5

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4.5 Replace LCD monitor with LED monitor

Screen Monitors:

Existing Scenarios

Type of monitor (LCD/LED)	Total No of monitors	Avg Running hrs. annually
LCD type	660	1440

Recommendation:

Replace LCD monitor with LED monitor, although a capital sum is involved in but ROI is less than 3 years and product life cycle is much more than that.

Table15: - Replacement of LCD monitor with LED monitor

Replacement of LCD monitor with LED monitor		
Total no. LCD monitors	Nos	660
Avg. running hours per day	Hrs	6
Avg. working days per year	Nos	275
Avg. Power consumption of LCD monitor	W	150
Total electricity consumed by LCD monitor	kWh	163350
Avg. Power consumption of LED monitor	W	50
Total electricity consumed by LED monitor	kWh	54450
Total electricity saving per year	kWh	108900
Rate of electricity	INR	12.3
Total monetary saving per year	INR	1339470
Investment	INR	3300000
Simple payback period	Years	2.5
Simple payback period	Months	29.6

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Annexure

Observation:

1) Leaving the door open when entering and exiting the room when air conditioner is on so solution is put a notice on the front and back of the door as a reminder.

2) Here we can use the PVC strip curtains at the door even though when the door is open there is no wastage of ac breeze.

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Observation:

1) Replacing the T12 tube lights by LED which leads to reducing the total annual energy cost and also energy is used effectively.

2) Motion sensors can be used there to automatically switch on the light when there is movement in corridor and switch off when there is no movement in corridor.

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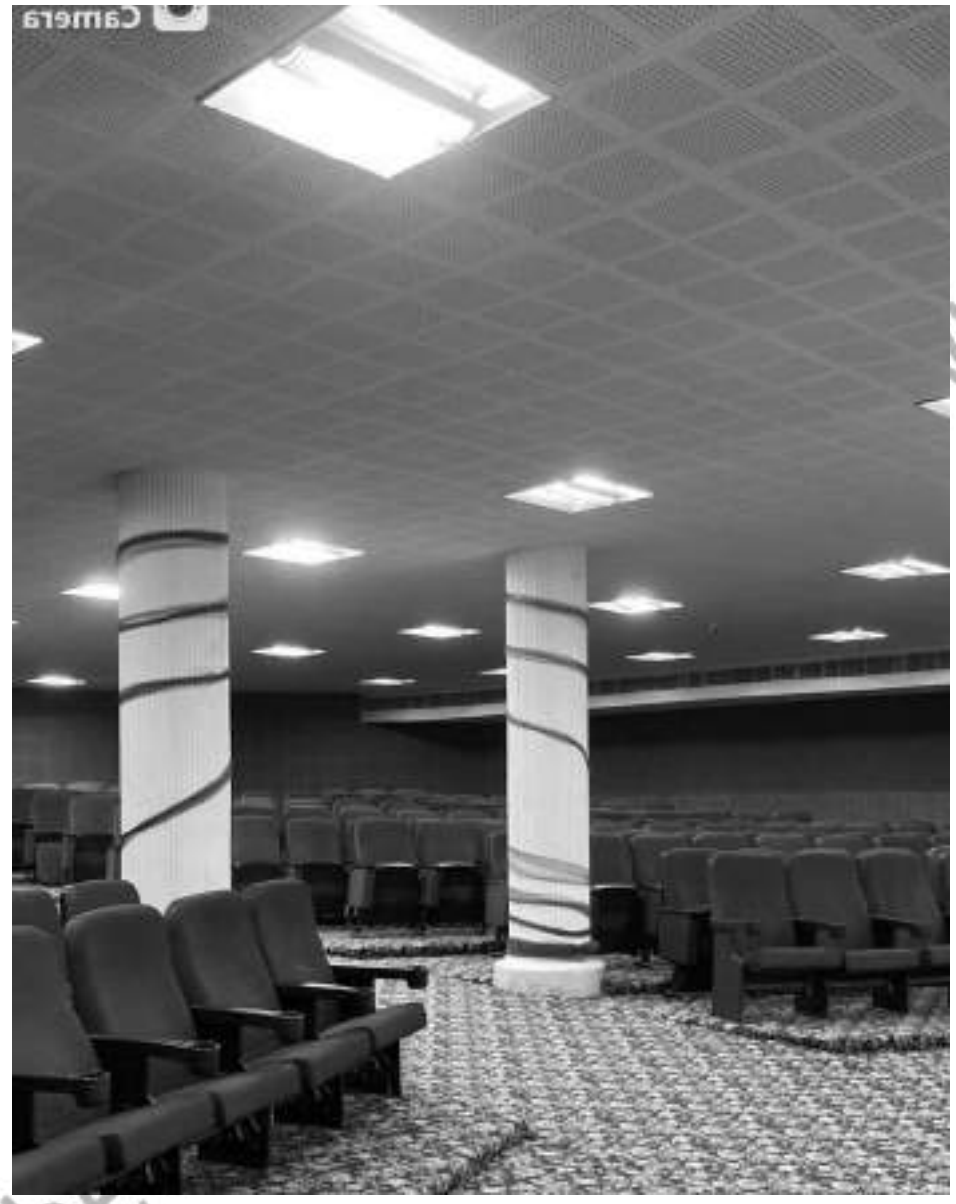

Observation:

1) It has been observed that lights are on, even though there is no person in the auditorium. Motion sensors can be used there to automatically switch on the light when there is movement and switch off when there is no movement.

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Observation:

1) Fans should be switched off when no one in the classroom.
2) Master switches should be installed outside the classroom

Recommendation: -

Visuals related to energy awareness should be implemented all across the facilities sample are as below: -

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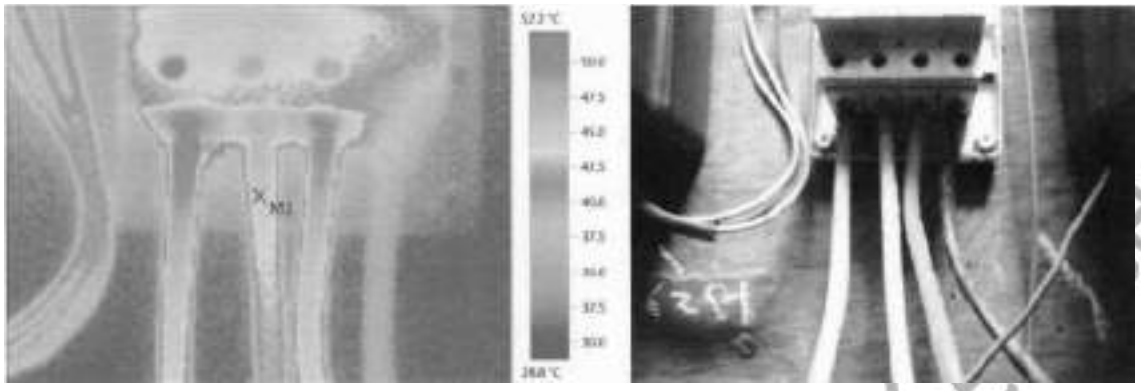

Picture parameters:

Emissivity: 0.99

Refl. temp. [°C]:20.0

Picture markings:

Measurement Objects	Temp. [°C]	Emiss.	Refl. Temp. [°C]	Remarks
Measure point 1	45.1	0.99	20.0	Center Spot
Hot Spot 1	52.2	0.99	20.0	-

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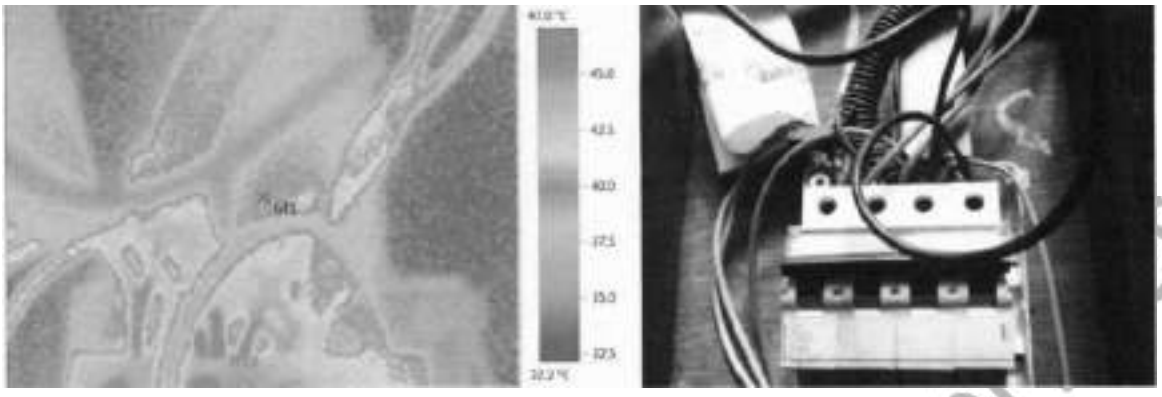

Picture parameters:
Emissivity: 0.99
Refl. temp. [°C]:20.0

Picture markings:

Measurement Objects	Temp. [°C]	Emiss.	Refl. Temp. [°C]	Remarks
Measure point 1	39.5	0.99	20.0	Center Spot
Hot Spot 1	47.0	0.99		

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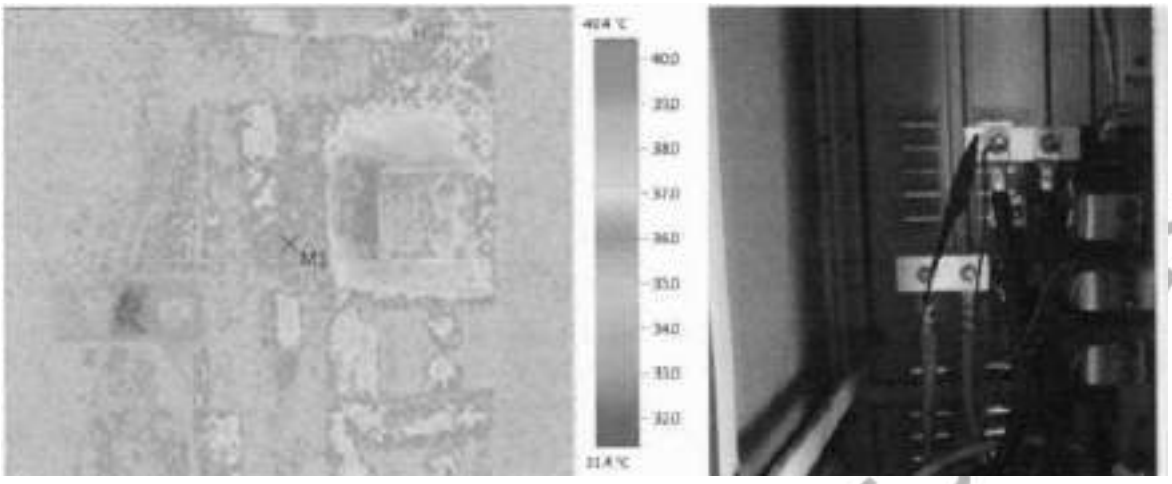

Picture parameters:

Emissivity:0.99

Refl. temp. [° C]: 20.0

Picture markings:

Measurement Objects	Temp. [°C]	Emiss.	Refl. Temp. [t]	Remarks
Measure point 1	35.7	0.99	20.0	Center Spot
Hot Spot 1	40.4	0.99	20.0	-

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6.Conclusion

The college's energy consumption is significantly higher than the industry average for similar facilities, indicating significant opportunities for energy savings.

The lighting and HVAC systems are the two major energy consumers in the college, accounting for more than 70% of the total energy consumption.

The college can achieve significant energy savings by implementing a range of energy conservation measures (ECMs), such as installing LED lighting, upgrading HVAC systems, and improving building insulation.

The recommended ECMs have a high potential for energy savings and are financially viable with a reasonable ROI period.

The implementation of recommended ECMs can help the college to reduce its energy consumption, lower operating costs, and reduce its carbon footprint, contributing to its sustainability goals.

Overall, the energy audit report provides a comprehensive roadmap for the college to improve its energy efficiency and sustainability. The implementation of recommended ECMs can help the college to achieve significant energy savings and reduce its environmental impact while improving the learning and working environment for students, faculty, and staff.

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Energy Audit Report of

Dronacharya College of Engineering

Khentawas, Farrukhnagar, Gurugram-122506

Conducted by

Tetrahedron Manufacturing Services

Date : 30 May, 2023

G-7, near Hindi Khabar, G Block, Sector 63, Noida, Uttar Pradesh 201307

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Email: - tms@tetrahedron.in

https://www.tetrahedron.in/

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DISCLAIMER

This report is based on the information provided by the management of **Dronacharya College of Engineering** & on-site observations on **29 May 2023 & 30 May 2023**. We certify that this information and following analysis is correct to the best of our knowledge and ability. The validity of the recommendations is dependent on the accuracy of log books and historical data supplied to us. This report (including any enclosures and attachments) has been prepared for the exclusive use and benefit of the addressee(s) and solely for the purpose for which it is provided. Unless we provide express prior written consent, no part of this report should be reproduced, distributed or communicated to any third party. We do not accept any liability if this report is used for an alternative purpose from which it is intended, nor to any third party in respect of this report. The recommendations and findings are to be used by client at their own accord and Tetrahedron Manufacturing Services or its associates would not be responsible for any material or non-material losses (if any) occurring in any way due to their implementation

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Energy Audit Report

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List of Abbreviations

ECM : Energy Conservation Measures
kWh : kilo Watt hour
kVAh : kilo Volt Amp Hour
LT : Low Tension
HT : High Tension
MT : Metric Ton
MTOE : Metric Ton Oil Equivalent
kW : Kilo Watt
SEC : Specific Energy Consumption
SPC : Specific Power Consumption
TPH : Tons Per Hour
VFD : Variable Frequency Drive
DOL : Direct on Line
Yr. : Year
Kg : Kilo Gram
W : Watt
C : Celsius
kVA : kilo volt Amp
V : Volt
I : Current
P : Power

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B. ACKNOWLEDGEMENT

Energy Audit Team of **Tetrahedron Manufacturing Services Pvt Ltd.** Expresses Our Sincere Gratitude to Management of **Dronacharya College of Engineering**, for providing us an opportunity to conduct an energy audit of their organization located In Khentawas, Farrukhnagar, Gurugram-122506, Haryana. We are grateful to Dr. Hansraj and other officials for showing keen interest in the study and for the help and cooperation extended to Energy Audit Team during study.

We do hope that you will find the recommendations given in this report useful in helping you save energy. While we have made every attempt to adhere to high quality standards, in both data collection and analysis, as well as in presentation through the report, we should welcome any suggestions from your side as to how we can improve further.

In case of any suggestions or queries:

Tetrahedron Manufacturing Services

Nitin Kumar - Director

Call: 8700454743

Email: - tms@tetrahedron.in

https://www.tetrahedron.in/

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C. EXECUTIVE SUMMARY

Energy is one of the major inputs in any facility and is the mainstay of the economic development of the country. Rising Electricity & fuel costs coupled with increased global competition is forcing players to slash the energy costs. Energy Audit helps in energy cost optimization, pollution control, safety aspects and suggests the methods to improve the operating & maintenance practices of the system. It is instrumental in coping with the situation of variation in energy cost availability, reliability of energy supply, decision on appropriate energy mix, decision on using improved energy conservation's, equipment's and technology.

Energy conservation is a continuous process and there is always scope for further improvements, with this objective the Energy Audit team with the active involvement of **Dronacharya College of Engineering** have identified the following energy conservation opportunities (ECO's) implementation of ECO's can further help reducing energy consumption.

Highlights

Table01: - Energy Usage Highlights

Description	Units	Values
Annual electricity consumption	Units	217876
Annual electricity cost/annum	INR	2212659

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Table02: - Summary of Energy Conservation Measures

Sr. No	Energy Conservation Measures	Annual Saving		Investment
		kWh	INR	INR
1	Replace conventional ceiling fan with energy efficient fan	2546.55	29829.56	169887.5
2	Replace conventional tube with energy efficient tube	7665.8	78630	99113
3	Replace LCD monitor with LED monitor	58750	757275	2189700
4	Replacement of old pumps with energy efficient pumps	5450	56534	58000

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D. INTRODUCTION

OBJECTIVE OF ENERGY AUDIT:

Energy audit is the key to a systematic approach for decision-making in the area of energy management and gives a positive orientation to the energy resource cost reduction. The primary objective of the energy audit is to determine ways to reduce energy consumption to lower operating costs.

The Energy audit is conducted with the following Objectives:

1. Detailed studies of the intended energy consuming equipment including historical and present energy performance trends
2. Quantification of Energy Losses, and Energy Saving Potential
3. Presentations of Energy Efficiency Measures with cost benefit analysis
4. Identifying potential areas of electrical energy economy.

This energy audit assumes significance due to the fact that the Dronacharya College of Engineering, total ***electricity bill crossed INR. 21 Lakhsfrom Apr,22 to Mar,23*** and it was aimed at obtaining a detailed idea about the various end use energy consumption activities and identifying, enumerating and evaluating the possible energy savings opportunities.

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ABOUT AUDIT TEAM MEMBERS:

We have dedicated an expert team for services. Your first point of contact with Tetrahedron Manufacturing Service will be with our dedicated customer services team. We are highly skilled, motivated and fully trained to assist you. Our services team includes our expert, highly experienced advisors for power factor correction systems, harmonic filter and others Energy and Power Quality problems who have over 40 years combined experience for the same. Each team member is dedicated to offering a high level of customer care and also strives for excellence to ensure that you receive the perfect service

METHODOLOGY OF WORK:

The methodology adopted for this audit was

- A preliminary energy audit has been conducted to establish the energy consumption of the organization by analysing the available past energy consumption data, identification of the areas requiring more detailed study and measurements.
- Visual inspection and data collection.
- Identification/verification of energy consumption and other parameters by measurements.
- Computation and in-depth analysis of the collected data, including utilization of computerized analysis and other techniques as appropriate were done to draw inferences and to evolve suitable energy conservation plan/s for improvements/ reduction in specific energy consumption.
- Potential energy saving opportunities
- Flow Chart for Methodology for report preparation

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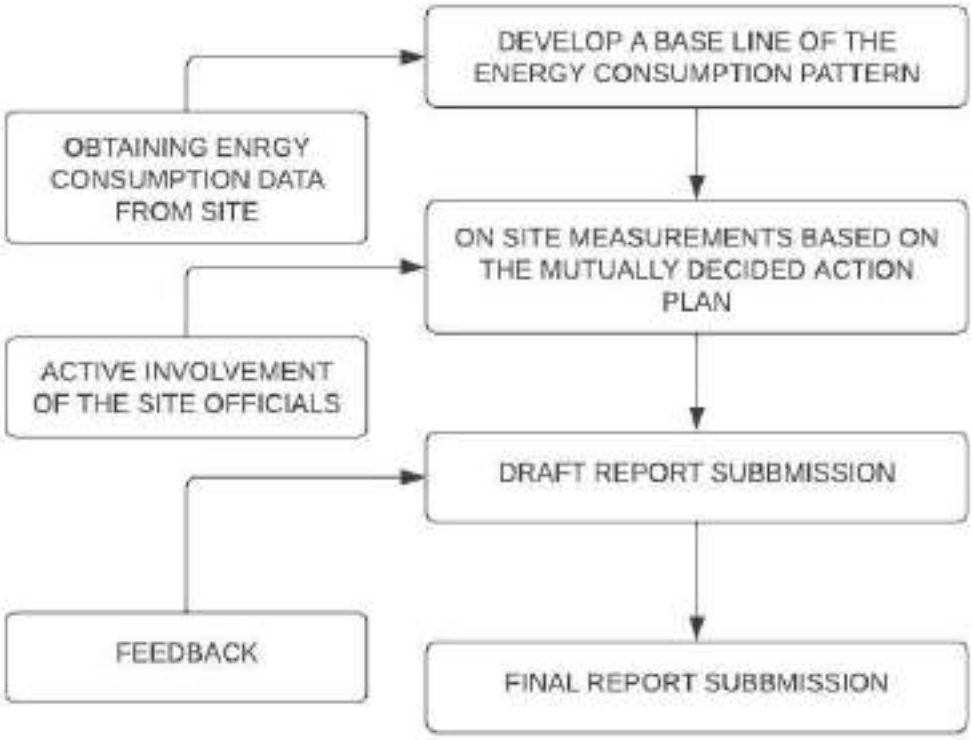

Figure 1 Energy Audit Flowchart

This report is just first step, a mere mile marker towards our destination of achieving energy efficiency and we would like to emphasize that an energy audit is a continuous process. We have compiled a list of possible actions to conserve and efficiently utilize our scarce resources and identified their savings potential.

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Energy Audit Report

1. Energy and Utility System Description

Major utilities in the campus are

1. General
2. Electrical

1.1 Brief Description of each Facility

This study is being done under the indicative scope of work for conduct of Energy Audit specified by Dronacharya College of Engineering. This study is mainly carried out to identify saving areas in Dronacharya College of Engineering with short term, medium term & long-term investments, yielding significant savings. The study can be mainly divided into following groups.

2.1.1 General

Energy Audit focuses on study of correlation of electricity consumption on production. Opportunities for load factor improvement, power factor improvements, etc.

b. Electrical

It includes motor load study of 1 HP & above by measuring input parameters (Voltage, Current, P.F., & kW), performance analysis of water pumps having capacities above 1 HP, performance analysis and identification of energy efficiency opportunities in motors, pumps, air compressors, lighting, etc.

1.2 Instrument Used

Following instruments are used for the study:

a. 3 Phase Power Analyzer-Fluke 1736
b. Lux Meter
c. Measuring tape
d. Thermal imager
e. Ultrasonic Water flow meter
f. Power Clamp
g. Distance Meter
h. Hygrometer
i. Others as required

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Power Quality Analyzer

Thermal Imager

UE System (Leak Detect System)

Anemometer

Ultrasonic
Flow Meter

LUX System

Pressure Gauge

Hygrometer

Distance Meter

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TDS Meter

Flu Gas Analyzer

Clamp Meter

Figure 2 Energy Audit Equipment

1.3 Energy Audit Team

Pratosh Saxena – Energy Auditor TMS
Nayan Kumar – Senior Energy Consultant TMS
Sushanta Bhattaray – Energy Consultant TMS
Tanshul Sharma – Energy Consultant TMS

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2. Description and Energy Consumption

2.1 About Dronacharya College of Engineering :

Dronacharya College of Engineering Gurugram was established in 1998 by Smt. Anguri Devi Charitable Trust. Dronacharya College of Engineering, Gurugram is affiliated with Gurugram University (GU), Gurugram and the institute is approved by the All- India Council for Technical Education (AICTE). Dronacharya College of Engineering Gurugram is ranked 26 out of 50 by ARIIA. It offers undergraduate and postgraduate courses such as B.Tech & M.Tech. Dronacharya College of Engineering admissions are based on the candidate's performance in entrance exams.

Dronacharya College of Engineering Gurugram has recorded the highest package 47 LPA in placement drive in 2022. The top recruiters are Adobe, Josh Technology Group, Info Edge, Limeroad, Accolite Digital, Detect Technologies, Accenture, Cognizant, IBM, HashedIn Technologies, Ameyo, Amazon.

Dronacharya College of Engineering Gurugram, Haryana, Placement

- Dronacharya College of Engineering placements 2022 finished recently, with over 325 recruiters giving BTech and M.tech students recruitment possibilities.
- According to the most recent data, the maximum package available to BTech students was INR 47 LPA, while the lowest package was INR 3 LPA. Moreover, training possibilities were made available to students throughout the placement session 2022.
- Pasona India Pvt Ltd awarded the highest stipend of INR 23,600. Dronacharya College of Engineering' top recruiters in 2022 were RTCamp Solutions Pvt Ltd., Adobe, Info Edge, Cognizant, IBM, Amazon, and others

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Dronacharya College of Engineering Gurugram Facilities

The Dronacharya College of Engineering in Gurugram offers a variety of amenities to help its students' academic, extracurricular, and general growth. These amenities are intended to provide a positive learning environment and to improve the overall college experience. While individual amenities may differ, I will present an outline of common facilities found at educational institutions.

Library: The college has a well-stocked library that acts as a knowledge centre for students. The library has a large collection of books, periodicals, research papers, and digital resources spanning a wide range of subjects. It gives students access to study materials, reference books, and internet databases to help them with their academic endeavours.

Laboratories: Cutting-edge laboratories are provided to meet the practical learning needs of students studying engineering, computer science, electronics, and other subjects. These labs are outfitted with cutting-edge instruments, tools, and software to allow for hands-on study and research.

Computer laboratories: The university has specialised computer laboratories that are outfitted with the most up-to-date gear, software, and high-speed internet access. Students can use these laboratories to improve their computer abilities, participate in programming exercises, perform experiments, and work on projects.

Classrooms: To establish an ideal learning environment, classrooms are spacious and well-designed. To assist successful teaching and learning, these classrooms are outfitted with audio-visual aids, projectors, and other modern teaching tools.

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They are intended to encourage student participation and engagement in interactive sessions.

Auditorium and Seminar Halls: The institution has an auditorium and seminar halls that may be used to organise a variety of events such as guest lectures, seminars, workshops, cultural activities, and academic conferences. These rooms have audio- visual technology and seating layouts that can accommodate a big audience.

Sporting and Recreation: The organisation values physical fitness and provides sporting facilities to encourage a healthy lifestyle. It has a playground, indoor sports facilities, and a fully equipped gymnasium. Students can engage in a variety of sports including cricket, football, basketball, badminton, table tennis, and others.

Hostel & Accommodation: The institution provides on-campus or adjacent hostel facilities for outstation students. These hostels offer a safe and comfortable living environment with services such as furnished rooms, study areas, common rooms, mess facilities, and 24-hour security. The hostels encourage a sense of community while also providing an environment suitable to study and personal growth.

Cafeteria & Food Services: The university features a large and clean cafeteria or food court where students may eat, snack, and drink. The cafeteria provides a variety of meal alternatives to accommodate a wide range of tastes and dietary needs.

Wi-Fi Internet connection: The campus has high-speed internet connection, allowing students to access online resources, research materials, and educational portals. Wi-Fi is offered in classrooms, libraries, dorms, and social spaces, allowing for seamless connectivity across the campus.

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Medical Facilities: Basic medical facilities are offered on campus to meet students' healthcare requirements. A medical centre with certified medical experts who provide first aid, basic medical consultations, and emergency services may be available at the institution. Furthermore, collaborations with adjacent hospitals or clinics guarantee access to specialised medical treatment as needed.

Transportation: The university may provide transportation to students and employees to make commuting easier.

Placement and Career Development: The university provides specialised placement and career development cells to help students advance in their careers. These cells organise placement drives, invite industry experts to provide guest lectures, hold resume and interview skills seminars, and enable internships and industrial partnerships.

Extracurricular Activities: It may include cultural event spaces, music and dance practise rooms, art studios, and clubs for a variety of hobbies such as robotics, coding, entrepreneurship, photography, and more.

Counselling and Support Services: Because the university recognises the value of mental health and well-being, it offers counselling and support services to students. Students having academic, personal, or emotional issues can seek guidance, assistance, and support from qualified counsellors.

Security and Safety: Security and safety are top priorities for the college, which maintains a watchful security system on campus. To guarantee a safe and secure workplace, security officers are employed, and CCTV cameras may be put in critical spots.

Alumni Network: The university has an active alumni network that allows current students and successful alumni to engage. The network offers mentorship, assistance, and networking opportunities, allowing students to make crucial contacts for their future jobs.

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Table03: - College Details

College Details		
No	**Particulars**	**Details**
1	Name of the College	Dronacharya College of Engineering
2	Address	Khentawas, Farrukhnagar, Gurugram-122506
3	Contact Person	Dr. Hansraj
4	Contact Phone number&	9910380110
5	E-mail	registrar@ggnindia.dronacharya.info
6	Web site	www.dronacharya.info
7	Type of Building	Educational Institute
8	Annual Working Days	220
9	No: of Shifts	Morning
10	No: of students enrolled	2393
11	No: of teaching staff	142
12	No: of non-teaching staff	91
13	No: of departments	9
14	No of UG courses	B.Tech
15	No: of PG courses	M.Tech
16	Total campus area	42087.31 sq. meter
17	Total Built Up area	22386 sq. meter
18	No: of hostel students	Nil
19	No: of plants in college	1200
20	No: of various species	740
21	Carbon Sequestration (ton) per anum	nil
22	Grounds and stadiums	Ground

Table04: - Building Area Details

Building Area			
Sl.No:	**Floor /Block**	**No Of Floors**	**Total Built Up Area(M2)**
1	05 Block	G+3F	21325 sq. meter
2	03 Block	Ist + IInd F	13000 sq. meter
3	03 Block	IInd F	5500 sq. meter

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2.2 Annual Energy Consumption

Electricity

Dronacharya College of Engineering is receiving electricity from NPCL (Noida Power Company Limited) Contract demand with NPCL is 50 KW.

3. Energy Scenario

3.1 Electrical Systems

3.1.1 Electrical bill analysis

Dronacharya College of Engineering is getting electricity supply from NPCL (Noida Power Company Limited) Major portion of the energy consumption is used for academics and hostel.

The observations made during the study are given in the following sections.

The Tariff Structure at the college

Tariff structure of the facility is given below

- Tariff Category LMV-4(Institution)
- Supply voltage 440 V
- Contracted demand 50 kW
- Demand charges INR 310/kW/month
- Unit charge INR 8.1/kVAh

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1. Power factor (PF)

In an ideal scenario, power factor should be maintained unity, FY 22-23 power factor is almost unity, although it's not unity but its approximately unity. Details are as follows:

Maximum power factor = 0.98

Minimum power factor = 0.96

Average power factor = 0.97

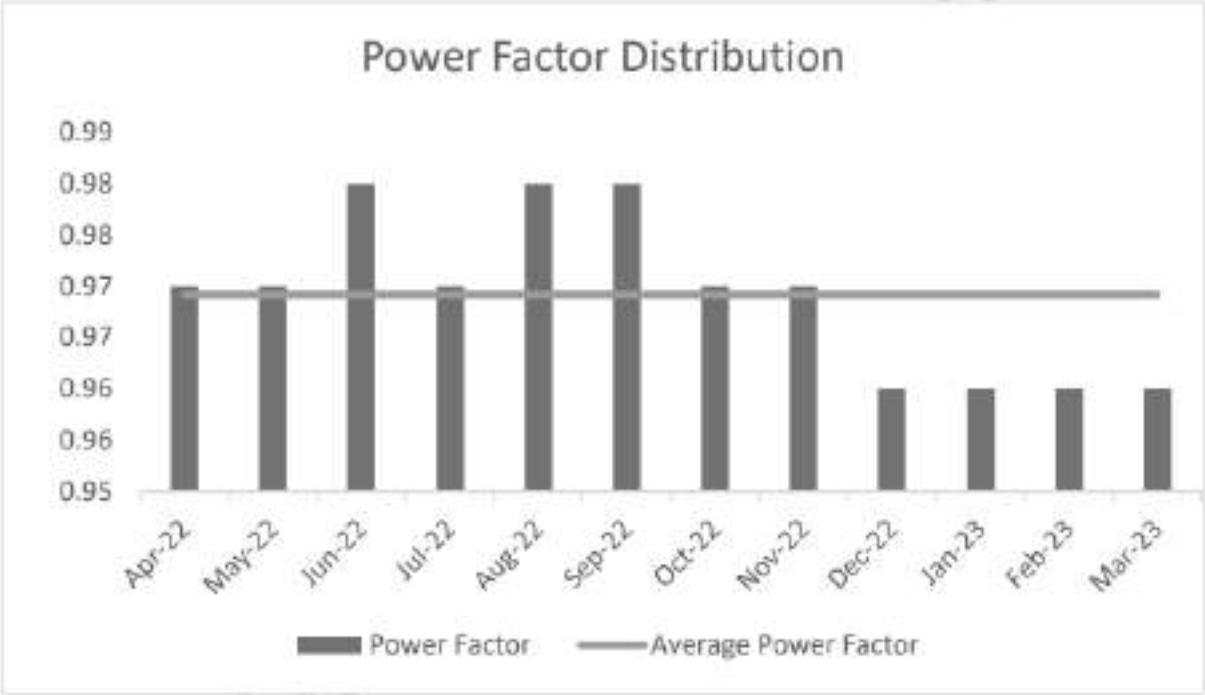

Figure 3 Power Factor

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TABLE 05: - Electrical Bill analysis

Month	Contractual Load (kW)	Contract Demand (KVA)	Billable Demand (KVA)	Power Factor	Billable Demand Charges	Energy Charges	Penal Dema-nd Charges	Electricity Duty Charges	Rebate@ 1.00%	Regulation Discount @ 10%	Delay Payment Surcharge	Prev. Adj.	Int. on SD	TDS on Int. on SD	Total Units	Total Amount
Apr-22	50	52	70	0.97	26474	131783	10866	11869	927				13314	1331	132709	168082
May-22	50	52	105	0.97	37346	184801	35240	16661	1583						186383	272466
Jun-22	50	51	92	0.98	32489	191722	25525	16816	2221						193944	264331
Jul-22	50	52	100	0.97	35620	204910	31789	18040			441	3305			204910	287495
Aug-22	50	51	111	0.98	38365	237542	38264	20693	2405	12149					239948	320310
Sep-22	50	51	125	0.98	40182	245002	44692	21389	2759	28518					247761	319987
Oct-22	50	52	101	0.97	33345	206667	29868	18001	2852	24001					209518	261028
Nov-22	50	52	74	0.97	22110	132830	10851	11621	2400	15494					135230	159517
Dec-22	50	52	51	0.96	15864	112087		9596	1549	12795					113637	123203
Jan-23	50	52	48	0.96	15526	108024		9266	1280	12355					109304	119182
Feb-23	50	52	47	0.96	15450	109230		9351	1236	12468					110465	120327
Mar-23	50	52	56	0.96	15787	83907	506	7477	1247	9969					85153	96461
Average	**50.00**	**52.00**	**81.64**	**0.97**	**27380**	**162375**	**25289**	**14232**	**1860**	**15969**	**441**	**3305**	**13314**	**1331**	**164080**	**209366**

Observation:

1) Maximum Energy charges INR 320310 in month of Aug-2023 and minimum INR 96461 in month of Mar-2023.
2) The average Power factor is 0.97.
3) The average Energy charges is INR 209366

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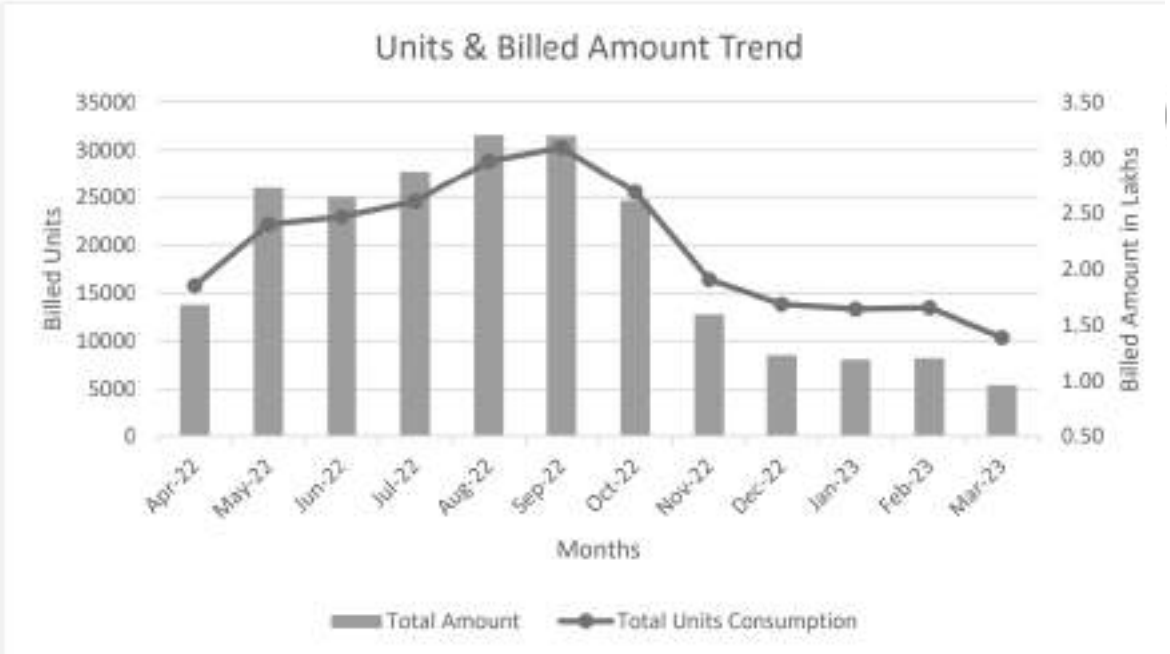

Figure 4 Units & Billed Amount Trend

Observation:

1) In Sep-22 Billed amount & Unit is maximum.

2) In Mar-23 Billed amount & Unit is minimum.

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Energy Audit Report

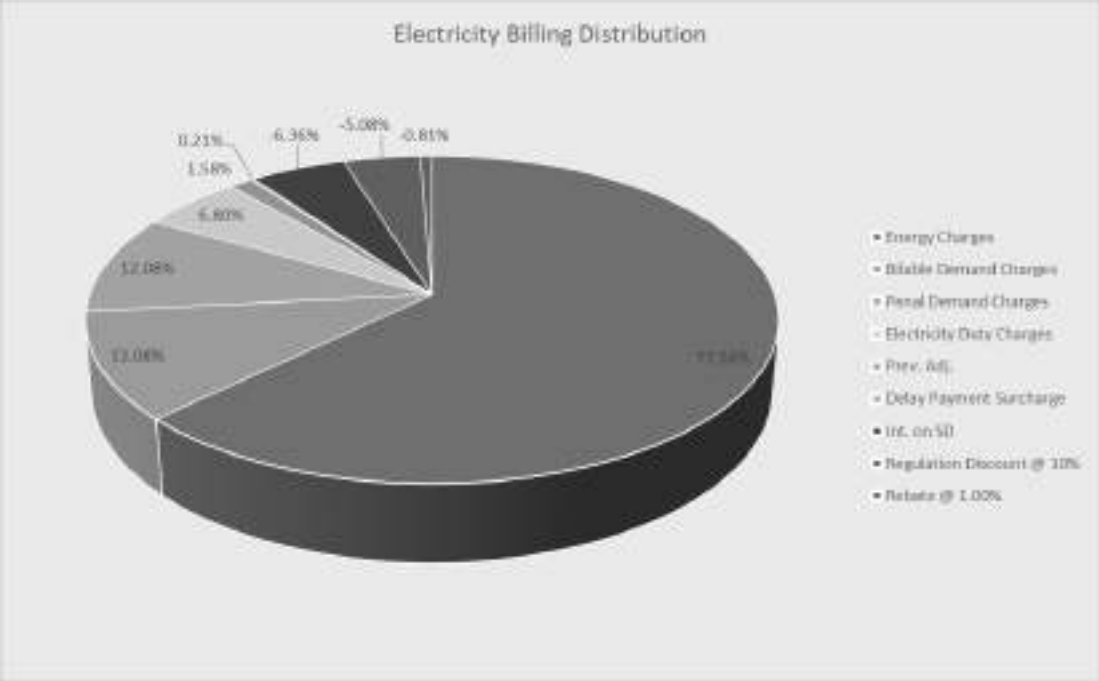

Figure 5 Billing Distribution

Observation:

1) Energy Charges are 77.56% of total bill.

2) Penal demand charges are 12.1% of total bill. which is a concern and it can be resolved by increasing contract demand or by proper utilization of electricity.

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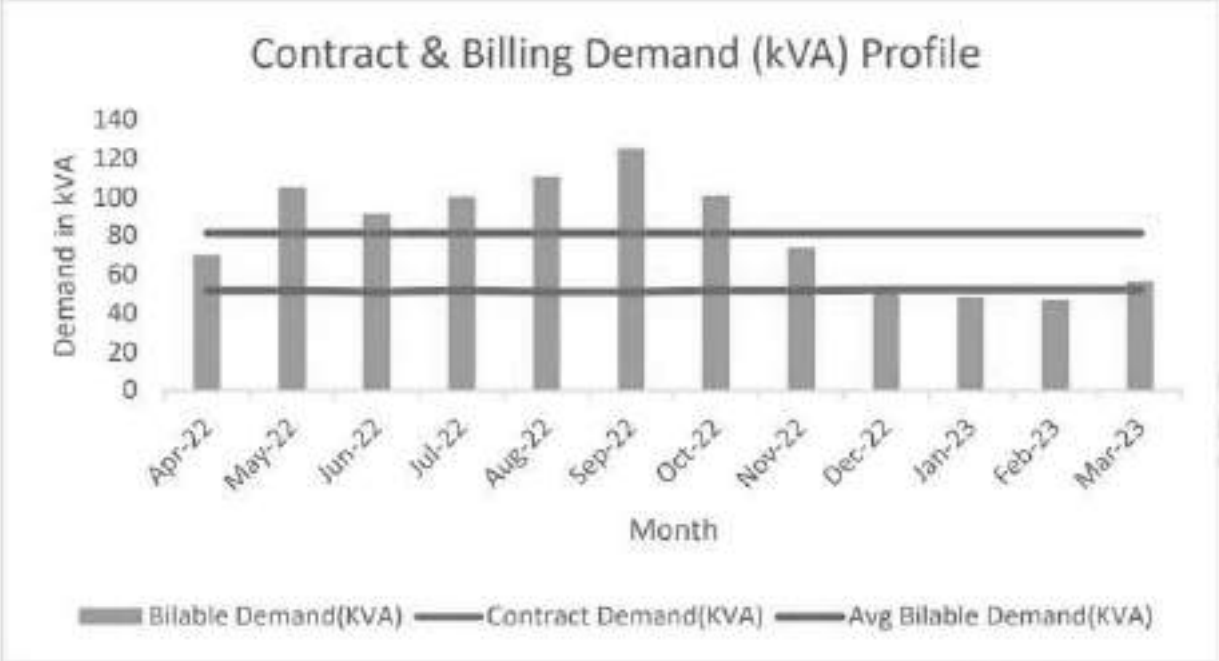

Figure 6 Contract & Billing Demand (kVA) Profile

Observation:

1) Demand is Maximum for Sep-22 i.e. 125 kVA.

2) Demand is Minimum for Feb-23 i.e. 47kVA

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Figure 7 Billed Demand Charges (INR) & Penalty (INR) Pattern

Observation:

1) Penalty is Maximum for Sep-22 i.e. INR 41689

2) Among billable penalty months, March-2023 was penalized least i.e., INR 506

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3.1.2 Diesel Generator

Following table shows the details of DG set.

Table06: - DG Set Details

Sl. No	Make	Capacity in KVA	Average Running Duration/hrs in day	kW	kWh	Diesel/hr in ltrs	Cost of Diesel/Ltr in Rs	Total Cost/day
1	Jakson	125	10	100	1000	11	86	9460
2	Kirloskar	15	6	12	72	3.25	86	1677

Recommendations:

1. Conversion of DG sets to Dual Fuel System
2. Use of Natural Gas with Diesel will reduce the diesel cost by at least 30%
3. GHG emissions will reduce by a minimum of 20%

After Implementing Dual Fuel System:

Table07: - DG Set Dual Fuel System

Sl. No	Make	Capacity in KVA	Average Running Duration/hrs in day	kW	kWh	Diesel/hr in ltrs	Cost of Diesel/Ltr in Rs	Total Cost/day
1	Jakson	125	10	100	1000	7.7	86	6622
2	Kirloskar	15	6	12	72	2.3	86	1174

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3.2 Water Pump

The performance analysis of the pumps used for water required for the institute is done based on the present operating parameters like water flow, head and power. Pumps of different capacities are installed based on the water flow requirement at different sections of the college. The water supply of the institute is met by bore well. There are number of pumps are running mainly in the institute campus.

Table08: - Pump Table

Pump Table				
Description	**Units**	**At Generator Side**	**At Bartaman Side**	**At Bartaman Side**
Design parameter				
Rated output	hp	3	7.5	3
	kW	2	5	2
Pump Efficiency	%	52	61	58
Motor Efficiency	%	78	88	88
Measured Parameter				
Voltage	Volts	415	412	195
Current	Amps	8.11	8.17	18
Flow Rate	m^3/hrs	33.49	63.89	59.77
Diff Pressure	kg/cm^2	1.27	1.37	1.36
Calculated Parameter				
Power	kW	4.96	5.01	5.17
System Efficiency	%	23.39%	47.57%	42.86%
Age	Years	~15	~6	~7

Observation:

1) Pump at the Generator side has less efficiency than other pumps, which is about 23%.

2) Pump at generator side is about 15 years old and more than 3 windings has already happened so recommendation is to replace the pump, while Bartaman side pump is 6-7 years old and efficiency is in the range of 45%, recommendation is check for windings, impeller etc.

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3.3) Air Conditioning

Table09: - AC Details

Sl NO	Name of Location	Type of AC	1 Ton	1.5 Ton	1.8 Ton	Star Rating
1	Classroom	Split	2			***
2	Laboratory	Split			16	***
		Window		8		***
3	Offices	Split		18		***
		Window		2		***
4	Library	Split		2		***
5	Guest Room	Window		2		***

ACs Data

Observation:

1). All ACs are 3 star rated.

2). As per BEE guidelines, energy efficient source should be employed across facilities i.e., 5* rated ACs should be used; as a huge capital is involved in it so a phase wise replacement can be done while prioritizing by older ACs replacement first.

3). ACs set temperature should be 24 degree C for human comfort as well as energy consumption point of view.

Although many ACs set temperature was found to be 24 degree C but some were not; so energy conservation visuals should be employed across facility to maintain 24 degree temperature and stating benefits of using set temperature at 24 degree C.

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3.4 Lighting System

Lighting is provided in commercial buildings, indoor and outdoor for providing comfortable working environment. The primary objective is to provide the required lighting effect for the lowest installed load i.e. highest lighting at lowest power consumption. There are number of buildings in Campus.

Table10: - Source Details

Sl NO	Name of Location	Type of Source	No of source	Each Wattage
1	Class Room	Tube light	280	20
2	Laboratory	Tube light	340	20
		2*2 LED Panel	120	36
3	Offices	Tube light	79	20
4	Library	Tube light	31	20
5	Canteen	Tube light	12	20
6	Guest Room	Tube light	10	20
7	Guard room	Tube light	4	20
8	IN BUILDING Other places (toilet/veranda /etc)	Tube light	120	20

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3.5 Fan Data

Majority of the fans are traditional type fans that consume more energy. Now in the market advanced BLDC type fans are available which consumes less energy and available advanced feature regulators

Table11: - Fan Details

SI NO	Name of Location	No of Fan
1	Class Room	220
2	Laboratory	300
3	Seminar Hall	70
4	Library	19
5	Canteen	2
6	Guest Room	2
7	Guard room	1

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4. Energy Conservation Measures

4.1 Replacing the Conventional fan with energy efficient fan

Recommendations:

These fans should be replaced with BLDC type fans, ceiling fan ROI is less than 4 years. as for all replacement a huge capital sum is involved so recommendations are to go in a phase wise manner. Other than wall fan, all other have ROI around 5 years, which is a good number so replacement in phase wise manner can be considered for them.

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Saving Potentials:

Table12: - Fan Replacement Savings

Fan Replacement Savings					
Description	**Units**	**Value**	**Value**	**Value**	**Value**
Present system					
Type of fan		**Ceiling fan**	**Wall fan**	**Pedestal fan**	**Exhaust fan**
Number of existing fan	Nos	426	23	9	93
Wattage /fan	Watt	60	45	55	40
Usage of fan per day	Hrs	8	8	8	12
Working days per annum	Days	225	225	225	225
Annual Energy consumption	kWh	45008	1763	831	9044
Proposed system					
Recommended for replacement	%	50%	50%	100%	75%
Recommended Energy Efficient fan	Nos	213	12	9	70
Wattage of Energy Efficient fan	watt	26	26	26	26
Annual Energy consumption	kWh	9968	538	421	4896
Annual Power saving	kWh	12035.6	393.3	459.8	2536.55
Energy tariff	INR	12.3	12.3	12.3	12.3
Monitory saving	INR	150337.9	4837.6	5678.54	31429.565
Investment/fan	INR	2800	3700	2750	2450
Total investment	INR	596400	42550	24750	160887.5
Simple Payback period	Years	3.7	8.8	4.3	5.3

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4.2 Replacing the Old Tube with LED tube

Findings:

Current lighting system is fluorescent type which is not energy efficient, now a days LED type energy efficient lighting system are available in market which should be considered.

Recommendations:

Replace the current tube light with LED tube which consumes less energy. In replacement table 2 scenario has been proposed while replacing all fluorescent light and while replacing 50% and their investment and ROI has also there.

Table13: - Current lighting with LED tube

Current lighting with LED tube			
Description	**Units**	**Value**	**Value**
Present system			
Number of existing tube lights	Nos	881	881
wattage /tube	watt	28	28
Total wattage	Watt	24668	24668
Daily usage	Hrs/day	8	8
Annual working days	days/yr.	275	275
Annual Energy consumption	kWh	54269.6	54269.6
Proposed system			
Recommended for replacement	%	100%	50%
Recommended of LED tube light	Nos	881	441
Wattage of LED tube light	Watt	20	20
Annual Energy consumption	kWh	38764	19382
Annual Power saving	kWh	15505.6	7752.8
Energy tariff	INR	10.8	10.8
Monetary saving	INR	167460	83730
Investment/LED tube light	INR	225	225
Total investment	INR	198225	99113
Simple Payback period	Years	1.2	1.2

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4.3 Water Pumping System

Findings:

The submersible pump is used to supply the water for institute. Pumps are old and one of the pump is of around 15 years old which should be replaced as its efficiency is ~24% & its replacement ROI is around 1-1.25 years.

Other 2 pump is also old but one with an efficiency of 42% is on standby mode and by changing motor winding it can again be used more efficiently.

Recommendations:

Replace the existing pump with Energy Efficient water pump.

Table14: - Pump Replacement

Pump Replacement		
Description	**Units**	**Pump at front gate of admin building**
Design parameter		
Rated output	hp	3
	kW	2
Pump Efficiency	%	52
Type		Submersible
Measured Parameter		
Proposed Power	kW	5
Daily Usage	Hrs/day	4
Annual Working Days		269
Annual Power Savings	kWh	5500
Energy Tarrif	INR/kWh	10.58
Monetary Savings	INR	57392
Total Investment	INR	60000
Simple Payback Period	Years	1

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4.4 Replace LCD monitor with LED monitor

Screen Monitors:

Existing Scenarios

Type of monitor (LCD/LED)	Total No of monitors
LCD type	450
LED Type	300

Recommendation:

Replace LCD monitor with LED monitor, although a capital sum is involved in but ROI is less than 3 years and product life cycle is much more than that.

Table15: - Replacement of LCD monitor with LED monitor

Replacement of LCD monitor with LED monitor		
Total no. LCD monitors	Nos	450
Avg. running hours per day	Hrs	6
Avg. working days per year	Nos	225
Avg. Power consumption of LCD monitor	W	150
Total electricity consumed by LCD monitor	kWh	90115
Avg. Power consumption of LED monitor	W	50
Total electricity consumed by LED monitor	kWh	30375
Total electricity saving per year	kWh	60750
Rate of electricity	INR	12.3
Total monetary saving per year	INR	725225
Investment	INR	2290000
Simple payback period	Yrs	3
Simple payback period	Months	36.1

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Annexure

Observation:

1) The computer should be turned off when no one is using it.

2)Motion sensors can be used to automatically switch on the lights in the computer lab when there is movement, and switch them off when there is no movement in the computer lab.

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Observation:

1) Replacing the T12 tube lights by LED which leads to reducing the total annual energy cost and also energy is used effectively.

2) Motion sensors can be used there to automatically switch on the light when there is movement in corridor and switch off when there is no movement in corridor.

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Observation:

1) It has been observed that lights are on, even though there is no person in the Lab. Motion sensors can be used there to automatically switch on the light when there is movement and switch off when there is no movement.

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Observation:

1) Keeping the window open is not advisable for the air conditioner.

2) Here we can use the PVC strip curtains at the Window even though when the window is open there is no wastage of ac breeze.

3) It has been observed that the lights and fan are on, even though there is no person in the room. Therefore, please switch off the lights and fan when no one is in the room.

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Observation:

1) Fans should be switched off when no one in the classroom.
2) Master switches should be installed outside the classroom

Recommendation: -

Visuals related to energy awareness should be implemented all across the facilities sample are as below: -

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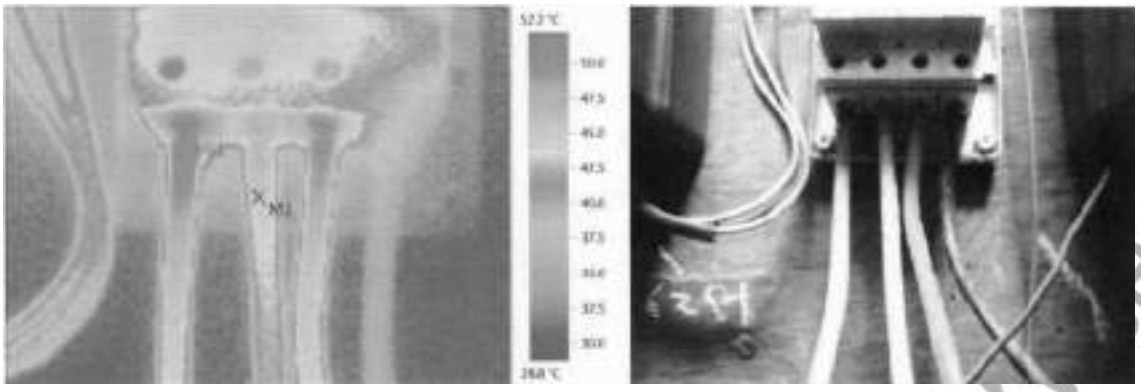

Picture parameters:

Emissivity: 0.99

Refl. temp. [°C]:20.0

Picture markings:

Measurement Objects	Temp. [°C]	Emiss.	Refl. Temp. [°C]	Remarks
Measure point 1	45.1	0.99	20.0	Center Spot
Hot Spot 1	52.2	0.99	20.0	-

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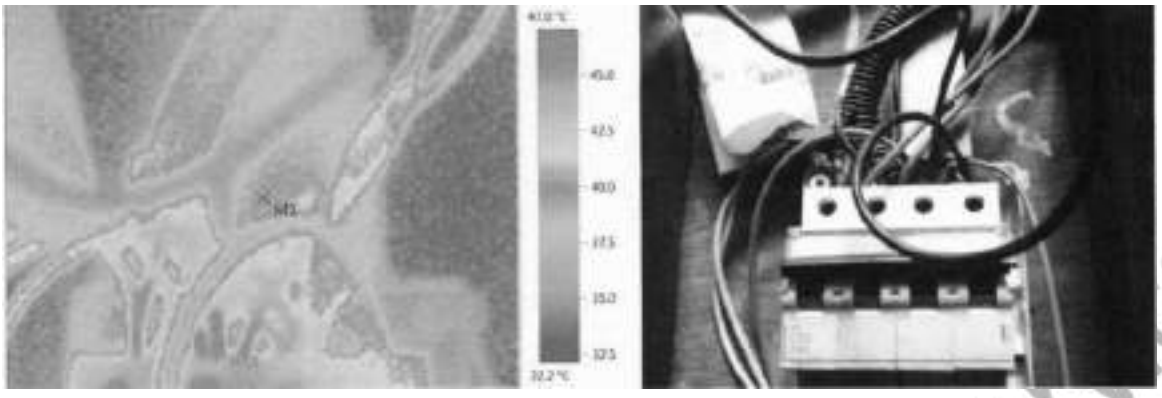

Picture parameters:
Emissivity: 0.99
Refl. temp. [°C]:20.0

Picture markings:

Measurement Objects	Temp. [°C]	Emiss.	Refl. Temp. [°C]	Remarks
Measure point 1	39.5	0.99	20.0	Center Spot
Hot Spot 1	47.0	0.99		

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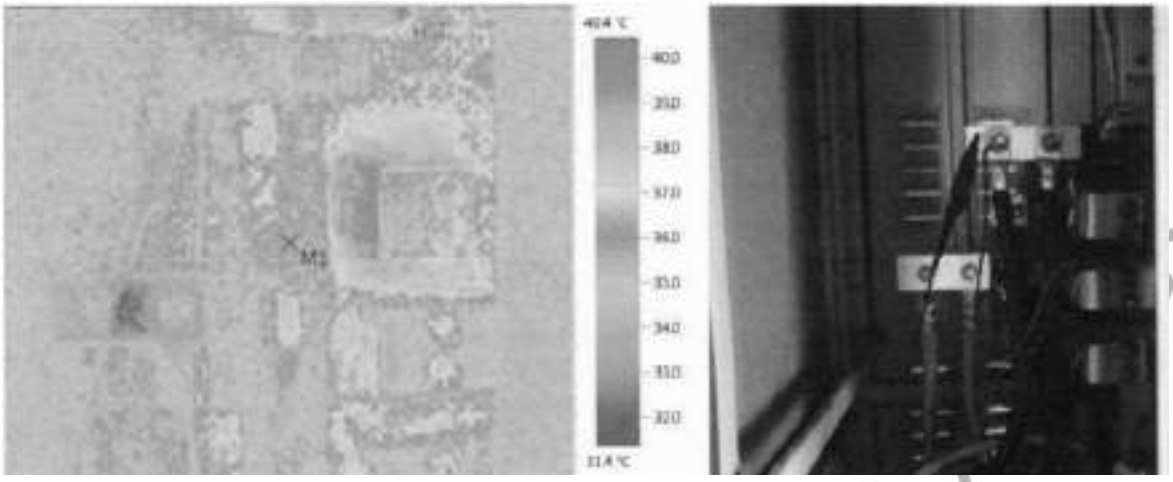

Picture parameters:

Emissivity:0.99

Refl. temp. [° C]: 20.0

Picture markings:

Measurement Objects	Temp. [°C]	Emiss.	Refl. Temp. [t]	Remarks
Measure point 1	35.7	0.99	20.0	Center Spot
Hot Spot 1	40.4	0.99	20.0	-

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6.Conclusion

The college's energy consumption is significantly higher than the industry average for similar facilities, indicating significant opportunities for energy savings.

The lighting and HVAC systems are the two major energy consumers in the college, accounting for more than 70% of the total energy consumption.

The college can achieve significant energy savings by implementing a range of energy conservation measures (ECMs), such as installing LED lighting, upgrading HVAC systems, and improving building insulation.

The recommended ECMs have a high potential for energy savings and are financially viable with a reasonable ROI period.

The implementation of recommended ECMs can help the college to reduce its energy consumption, lower operating costs, and reduce its carbon footprint, contributing to its sustainability goals.

Overall, the energy audit report provides a comprehensive roadmap for the college to improve its energy efficiency and sustainability. The implementation of recommended ECMs can help the college to achieve significant energy savings and reduce its environmental impact while improving the learning and working environment for students, faculty, and staff.

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Certificate of Registration

THIS IS TO CERTIFY THAT THE QUALITY MANAGEMENT SYSTEM OF

Dronacharya College of Engineering

Site: Khentawas, Farukhnagar, Gurgaon(HR.)-122506

HAS BEEN FOUND TO CONFORM TO THE STANDARD

ISO 10001:2018

(Quality Management- Customer Satisfaction- Guidelines for codes of conduct for organziations)

Approval is hereby granted for registration, provided the certification rules and conditions are observed at all times

THIS CERTIFICATE IS VALID FOR THE FOLLOWING SCOPE:

Provision of Education in the field of Engineering and Technology.

Principal
Dronacharya College of Engineering
Farrukh Nagar, Gurgaon.

First Date of Issue
22/05/2023

Date of Issue
22/05/2023

Certificate Validity
3 Years

Reissue Due Date
22/05/2024

Certificate Number
ECA/02/5282023

Technical Manager

EUROPEAN COMPLIANCE ASSESSMENT

Certificate of Registration

THIS IS TO CERTIFY THAT EDUCATIONAL ORGANIZATION MANAGEMENT SYSTEMS OF

Dronacharya College of Engineering

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Certificate Number
ECA/02/5292023

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Certificate of Appreciation

THIS CERTIFICATE APPRECIATES THAT,

Dronacharya College of Engineering

has signed the "Not Zero-Net Zero" Pledge to become
Carbon Neutral Educational Institute

We appreciate your efforts in combating Climate Change and
Sustain our Environment for Future Generation

TERRE Policy Centre

SUUN

Rajendra Shende
Chairman
TERRE Policy Centre.
Former Director UNEP

TERRE Policy Centre INDIA Pune

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To
THE PRINCIPAL
DRONACHARYA COLLEGE OF ENGINEERING
Khentawas, Farrukh Nagar – 123506
Gurgaon, Haryana

DT: 18-2-2021

SUB: OLD RECORDS RECYCLING/PULPING

This is to confirm that we have collected 4349.95 kg of Old practical file, answer sheets etc. (as detailed below) on 18-02-2021 in presence of institution staff at COLLEGE CAMPUS: Khentawas, Farrukh Nagar – 123506, Gurgaon, Haryana

S.No	CATEGORY	Rate/kg (Rs)	DEDUCTION	Final Rate (Rs/kg)	Weight (kg)	TOTAL (Rs.)
1	WHITE PAPER	₹ 12.00	0	₹ 12.00	0	₹ 0.00
2	Old question paper/Answer sheet/record	₹ 11.00	0	₹ 11.00	562.5	₹ 6,187.50
3	Practical books/File(with cover or cardboard with deduction of 20% in weight at Rs 0.00	₹ 10.00	10%	₹ 9.00	3464.3	₹ 31,178.70
4	Chart paper/Newspaper/Magazine/Mix paper	₹ 10.00	0	₹ 10.00	323.15	₹ 3,231.50
	TOTAL				4349.95	₹ 40,597.70

We also confirm that all the recyclable waste paper will be channelized for recycling post sorting process.

For Greenobin Recycling Pvt. Ltd.

GREEN RECYCLING PVT. LTD. GURGAON

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Dronacharya College of Engineering

Approved by AICTE, New Delhi

Affiliated to MDU, Rohtak

Policy Document On Environment and Energy Usage (Facilities and Initiatives)

With effect from 2019 onwards

Principal
Dronacharya College of Engineering
Farrukh Nagar, Gurgaon

Policy Document on Environment and Energy Usage and Green Campus

Contents

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Preamble

The Environment and Energy Usage Policy of Dronacharya College of Engineering is committed to managing energy efficiently and systematically to minimize its environmental impact. This policy focuses on exploring renewable energy sources to lessen dependency on conventional energy, thereby reducing the burden on the government. Additionally, it aims to identify and promote sustainable alternatives to address the growing energy crisis, ensuring a greener and more sustainable future.

This environment and energy policy is binding for all the components of the institution and applies to all its stakeholders and to the various activities undertaken by the institution. It will help us to embed efficiency and environmental awareness into our everyday activities, thus helping us to realize our responsibilities and commitment to conservation of natural resources and to limit its usage

Objective:

- To encourage green practices within the campus and beyond.
- To develop awareness about environmental issues.
- To understand one's responsibility towards energy conservation.
- To reduce waste production on campus for all activities and programs
- To initiate water management and conservation practices.
- To maintain cleanliness and sanitation on campus.
- To provide a pollution-free healthy environment.

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Practices:

The college is committed to sustainable development in all its endeavours. In accordance following are the areas to be considered for streamlining ways and procedures for environment and energy conservation.

A) Green Environment and Clean Campus
B) Energy conservation and management
C) Waste management -Solid, Liquid & E-Waste Management
D) Water Conservation and Management
E) Ban on single-use plastics on the Campus
F) Paperless operating procedures
G) Taking up awareness initiatives and environment-centric activities

A) Green Environment and Clean Campus

The students are given strict instructions to maintain the campus clean. A gardener and full time adequate support staff are appointed for the maintenance of litter free clean and green campus. Solid waste is segregated as bio degradable and non-degradable and handed over to Municipal Corporation. All Departments and classrooms are provided with dustbins for dry wastage disposal. Segregation of waste into dry and wet waste from the separately allotted dustbins is dine in strategic locations, thus maintain the campus clean and eco- friendly. Use of sanitary disposal machine is one of the best practices adopted by the college towards eco-friendly disposal mechanisms. Food leftover from the canteen is treated and converted into vermin-compost.

The college adopts most scientific and eco-friendly e waste disposal mechanisms such as Annual Maintenance Contract is maintained to periodically review the effective of CPU's and monitors.

- The green cover is reasonably good with trees and plants of the variety.
- The college plans to work towards a more decent landscape.
- To undertake a tree plantation drive.
- To reduce local air pollution emissions using environment friendly vehicles, including bicycles, public transportation and use of pedestrian-friendly roads

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B) Energy conservation and management.

• To install and use LED bulbs in the College campus to save energy.

• To invest in power-efficient equipment.

• To create awareness that small actions matter – "Save Energy" labels/posters are put up at various locations in the College.

• Use of natural lighting and ventilation is encouraged as and when possible.

• To take additional measures to continuously improve our energy consumption.

• To ensure the availability of necessary resources to achieve our objectives.

C) Waste management -Solid, Liquid & e-Waste Management

• Two-way segregation of waste at source, on campus.

• Practice the 4 R's Reduce, Reuse, recycle and refuse wherever possible.

• Reduce waste production on campus.

• Sanitary Napkin Incinerator and Sanitary Napkin Disposal Machine is Installed and used.

• Follow Eco friendly practices in daily activities and programs.

• Prefer using bags made of eco-friendly material.

• Preference to eco-friendly items and material for packaging and decorations as well as for gifting/memento and felicitating guests, during various programs.

• Reduce usage of paper by encouraging techno-centric teaching and administrative model.

• To develop a systematic waste management mechanism

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D) Water Conservation and Management.

• To use rainwater recharge pit for water conservation and management.

• Periodic mending and repairs of leaks in taps and pipes are done.

• Planting an indigenous variety of plants and less water-requiring plants in the College campus.

• To create awareness that small actions matter by putting up Save Water labels/posters are put up in various places in the College.

• Organizing water conservation activities for creating awareness amongst the faculty and students on campus.

• By using and replacing sanitary fixtures with water-efficient faucets and nozzles.

E) Paperless operating procedures.

• Move towards a paperless office with E-office practices as encouraging communication through emails and other virtual platforms.

• Digital storage of documents through local admin PC.

• To form subject wise what's app groups and google classrooms for communication and transaction of course content.

• To have College social media handles- Instagram, Facebook, Linkedin, Twitter, You tube.

• To have a fully functional College website.

F) Ban on single-use plastics on the Campus.

• To strive towards a plastic-free campus with the prohibition on using single-use plastic on campus.

• To conduct sensitization programs on harmful effects of single use plastic.

• Practice the 4 R's Reduce, Reuse, recycle and refuse wherever possible.

• Follow Eco friendly practices in daily activities and programs. Prefer using bags made of eco-friendly material.

• Preference to eco-friendly items and material for packaging and decorations as well as for gifting/memento and felicitating guests, during various programs.

G) Taking up awareness initiatives and environment-centric activities.

• The College through its academic subject, Environmental Studies is devoted to the cause of environmental awareness, undertaking green initiatives, and conducting green literacy programs to save energy and to protect the environment. Students take up various awareness-raising activities and programs.

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Responsibilities:

The management team is responsible for implementing and monitoring this policy.

All employees are responsible for complying with this policy and contributing to the achievement of environmental and energy conservation goals.

Conclusion:

We are committed to protecting the environment and conserving energy resources in all aspects of our operations. We will continually assess our performance and strive for improvement, ensuring that we meet or exceed our environmental and energy conservation goals.

References:

- **UGC Guidelines for development of Green Campus, 2016**
- **Swachh Campus – A manual for Swachhta Ranking of Higher Education Institutions, Government of India Ministry of Human Resource Development 2017**
- **AICTE Green Campus Initiative**

Principal
Prof. (Dr.) Isha Malhotra

IQAC Coordinator
Dr. Neelam Bhardwaj

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DRONACHARYA
College of Engineering

Khentawas, Farrukh Nagar, Gurugram, Haryana
Approved by: All India Council for Technical Education (AICTE), New Delhi
Affiliated to: Gurugram University, Gurugram

Report on Environmental Promotional activities conducted beyond the campus

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Events Report

NSS units, Dronacharya College of Engineering, Gurugram actively extends its commitment to environmental sustainability beyond the campus through various eco-friendly initiatives. Emphasizing **environmental awareness**, **community engagement**, and **sustainable development**, the institution organizes **tree plantation drives, cleanliness campaigns, water conservation programs, and waste management activities** in nearby areas. By collaborating with local communities, students and faculty promote **green practices, renewable energy solutions, and eco-conscious living**. These initiatives align with the college's vision of fostering **environmental responsibility, social awareness, and sustainable innovation**, reinforcing its role as a **catalyst for positive environmental change** beyond the academic sphere.

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List of sample beyond the campus environmental promotion activities conducted during five years

S.No.	Particulars	Date
1	“World Bicycle Day”	3rd June 2023
2	Celebration on "World Environment Day"	5th June 2023
3	“Kargil Vijay Diwas “Tree Plantation Drive	23rd - 29th July 2023
4	“Tree Plantation Drive” at Gurugram University Campus	18th September 2023
5	Cleanliness Drive in Nearby Areas Under the Campaign: Swachhata Hi Seva - EK TAREEKH, EK GHANTA, EK SAATH	1st October 2023
6	Plastic Waste Free Campaign	15th November 2023
7	Pollution Control Day Awareness Program	2nd December 2023
8	Energy Conservation Day Awareness Program	14th December 2023
9	Awareness Session on Water Conservation	22nd March 2024
10	Earth Day Celebration	22nd April 2024
11	World Environment Day	5th June 2022
12	NSS Orientation Programme and Tree Plantation	24th August 2022
13	“National Unity Day “Clean India 2.0	1st - 31st October 2022
14	Tree Plantation Drive	23rd December 2022
15	National Pollution Control Day Awareness Programme	2nd December 2022
16	National Energy Conservation Day	14th December 2022

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17	Earth Day Celebration	22nd April 2023
18	World Environment Day	5th June 2021
19	Swachhta Pakhwada	1st October 2021
20	Plastic Waste Free Campaign	15th November 2021
21	International Forest Day	21st March 2022
22	Plastic Waste Free Campaign	18th August 2020
23	Swachhta Pakhwada	2nd October 2020
24	International Forest Day	21st March 2021
25	"World Water Day"	22nd March 2021
26	Earth Day Celebration	22nd April 2021
27	Plantation Drive	5th June 2019
28	Plastic Waste Free Campaign (Swachhata Hi Seva)	11th - 27th September 2019
29	Campaign : One Student One Tree	5th & 11th December 2019
30	Swachhta Pakhwada	16th - 30th January 2020

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World Bicycle Day

3rd June 2023

Every year on **June 3**, **World Bicycle Day** is celebrated to create awareness about the benefits of using bicycles as a simple, safe, environmentally fit mode of transportation.

NSS Units, Dronacharya College of Engineering, Gurugram celebrated **Bicycle Day** under the theme **"Riding Together for a Sustainable Future"** by organizing a cyclothon. Automotive vehicles emit several pollutants depending upon the fuel they consume. Major of them are carbon monoxide, nitrous oxide, sulfur oxides and petrochemicals, which have damaging effects on both environment and human health.

On Bicycle day the students were encouraged to move toward more environment friendly vehicles like bicycles for betterment of physical health as well as the environment.

https://ggnindia.dronacharya.info/events/bicycle-DAY-3-JUNE-2023.aspx?Month=Jun&Year=2023

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Celebration on "World Environment Day"

5th June 2023

World Environment Day is celebrated each year on **5th June.** The first celebration, under the slogan "Only One Earth" took place in 1973. This year marks the 50th anniversary of the World Environment Day. This day is celebrated to create awareness about environmental problems like air and water pollution, global warming, wildlife extinction and measures to prevent them.

NSS Units, Dronacharya College of Engineering, Gurugram celebrated World Environment Day under the theme "**Beat Plastic Pollution'**' on **5th June, 2023.** The **55 NSS volunteers** under the guidance of Ms. Pooja Sharma (NSS Coordinator) held posters and banners and rallied in and near the college to create awareness about the ill effects of plastic pollution. Student and faculty members also participated in the tree plantation drive and planted many saplings in the nearby areas.

They told the nearby villagers, how 430 million tons of plastic is produced every year out of which only 10% is recycled. Rest of the plastic waste is either thrown away in the rivers and other water bodies or burnt, both of the scenarios lead to pollution that harms the environment. The local residents were encouraged to reduce their plastic consumption and try to use organic materials for the betterment of mother earth.

https://ggnindia.dronacharya.info/events/environment_day-5-JUNE-2023.aspx?Month=Jun&Year=2023

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Kargil Vijay Diwas

Tree Plantation Drive

23rd - 29th July 2023

NSS Units, Dronacharya College of Engineering, Gurugram observed **"Kargil Vijay Diwas".** A **Tree Plantation Drive** was carried in the nearby areas (**Patli, Sayyad Mohamadpur, Hajipur & Khentawas Villages)** from **23rd - 29th July, 2023**. The day holds immense significance as it marks the victory of the Indian armed forces in the Kargil War against Pakistan. The courageous efforts and sacrifices of the soldiers during the 1999 conflict were honored and remembered on this solemn day. 55 Students participated in the tree plantation activities.

The theme of the celebration was **"Beat Plastic Pollution''. Dr. Ashok Kumar** (NSS PO, DCE) welcomed **Chief Guest Dr. Rakesh Yogi,** Dean Law & Humanities Gurugram University and Guest of Honour Dr. Vijay Mehta, the NSS coordinator of Gurugram University. **Dr. B.M.K. Prasad** (Director, DCE) and **Dr. Isha Malhotra** (Principal, DCE) presented saplings to the esteemed guests and honoured them. They addressed the NSS volunteers on this occasion and planted trees in the college premise and nearby areas.

Afterwards, Dr. Ashok Kumar (NSS PO, DCE) illuminated the students about the history of Kargil War. He said; the Kargil conflict began when Pakistani troops infiltrated the Indian Territory in the Kargil district, situated in the former Jammu and Kashmir region (now part of Ladakh UT). Responding to the aggression, the Indian Army launched 'Operation Vijay' with the primary objective of reclaiming the occupied Indian Territory along the Line of Control (LoC). Initiated on May 3, 1999, the operation was supported by the Indian Air Force's airstrike under 'Operation Safed Sagar' on **May 26.**

On the following days, The NSS volunteers under the guidance of Dr. Ashok Kumar, Dr. Anupam Dalal and Ms. Pooja Sharma (NSS Program Officers) held posters and banners and rallied in and near the college to create awareness about the ill effects of plastic pollution. Student and faculty members also participated in the tree plantation drive and planted many saplings in the nearby areas.

https://ggnindia.dronacharya.info/events/kargil-vijay-diwas-23-29-july-2023.aspx?Month=July&Year=2023

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Tree Plantation Drive at Gurugram University Campus

18th September 2023

Dr. Ashok Kumar (NSS Program Officer) along with NSS Volunteers**, Dronacharya College of Engineering, Gurugram** participated in tree plantation drive held at **Gurugram University** on **18th Sptember 2023.** 10,000 saplings were planted on the tree plantation drive.

Prof. Dinesh Kumar (Vice Chancellor Gurugram University) and **Mr. Sunadar Lal Yadav** (Sarpanch Sikanderpur) inaugurated the event and described the initiative of AICTE **"One Student One Tree". Prof. Dinesh Kumar said** "It is time to pay heed to surroundings and work to build a better planet and it is very important for each individual to plant at least one tree in his lifetime", He said, Trees exhale for us so that we can inhale them to stay alive. 10,000 saplings were planted on the day.

https://ggnindia.dronacharya.info/events/Tree-Plantation-Drive-Gurugram-University-18-SEP-2023.aspx?Month=Sep&Year=2023

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Cleanliness Drive in Nearby Areas

Under the Campaign: Swachhata Hi Seva - EK TAREEKH, EK GHANTA, EK SAATH

1st October 2023

NSS Units, Dronacharya College of Engineering, Gurugram participated in **"Swachhata Hi Seva"** campaign on **1st October, 2023** from the college campus to the Patli Railway Station, under the guidance of Programme officers Dr. Ashok Kumar and Dr. Anupam Dalal and showcased their commitment to a cleaner India.

Swachhata Hi Seva, i.e. "Cleanliness is Service," was a nationwide campaign initiated by the Government of India with the aim of promoting cleanliness, sanitation, and hygiene across the country. The campaign was part of the larger Swachh Bharat Abhiyan (Clean India Mission) launched in 2014, which has made significant strides in improving India's cleanliness and sanitation standards.

The primary objective of **"Swachhata Hi Seva"** was to create a mass movement that fosters a sense of responsibility and ownership for cleanliness among citizens. The campaign sought to engage people from all walks of life to work collectively towards the goal of a cleaner and healthier India.

DCE NSS volunteers were involved in activities such as cleaning streets, parks, roads and railway tracks to promote cleanliness and hygiene. The students were seen carrying posters and placards to spread awareness about the importance of cleanliness and sanitation. The initiatives aimed to change people's mind-set and habits regarding waste disposal and cleanliness and to educate individuals about proper waste disposal, recycling, and sanitation practices.

Volunteers have demonstrated exemplary commitment and dedication to the Swachhata Hi Seva campaign. Their efforts to extend the campaign from the college campus to Patli Railway Station have made a significant and positive impact on both locations. They have not only improved the cleanliness and hygiene of these areas but have also fostered a sense of responsibility and ownership among the community. The NSS students are commended for their dedication to the campaign's goals and for setting an inspiring example of responsible citizenship and community service.

Lastly, students and the citizens took the Swachh Bharat Pledge, committing to maintain cleanliness in their surroundings, reduce waste generation, and actively participate in cleanliness initiatives.

https://ggnindia.dronacharya.info/events/Swachhata-Hi-Seva-1-OCT-2023.aspx?Month=Oct&Year=2023

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Plastic Waste Free Campaign

15th November 2023

NSS Unit of Dronacharya College of Engineering successfully organized a **Plastic Waste Free Campaign** on **15th November 2023** in **Khurumpur**, the college's adopted village. Led by **Dr. Anupam Dalal**, along with **14 NSS volunteers**.

The campaign aimed to raise awareness about the harmful effects of plastic pollution and encourage the use of sustainable alternatives. The event was a significant step towards fostering environmental consciousness among the local residents and promoting a cleaner, greener future.

During the campaign, NSS volunteers actively interacted with the villagers through **awareness rallies, interactive discussions, and informative sessions**. They highlighted the long-term consequences of plastic waste on health, biodiversity, and the ecosystem. To reinforce the message of sustainability, the volunteers distributed **eco-friendly bags**, encouraging residents to replace single-use plastics with biodegradable alternatives. The enthusiasm and participation of the local community made the event impactful and inspiring.

The **Plastic Waste Free Campaign** was a testament to **Dronacharya College of Engineering's** commitment to environmental responsibility and community welfare. By engaging directly with the villagers and spreading awareness, the initiative helped instill a sense of responsibility toward sustainable living. The NSS Unit remains dedicated to organizing such initiatives in the future, ensuring a lasting impact in promoting a cleaner and healthier environment.

https://ggnindia.dronacharya.info/events/Plastic-Waste-Free-Campaign-15-Nov-2023.aspx?Month=Nov&Year=2023

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Pollution Control Day Awareness Program

2nd December 2023

NSS Units of Dronacharya College of Engineering, Gurugram, conducted a National Pollution Control Day Awareness Program on **December 2, 2023,** in Khentawas village. Under the leadership of **Dr. Anupam Dalal,** a team of 15 NSS volunteers actively engaged with the local residents, educating them about the harmful impact of pollution on health and the environment.

The objective of the Awareness Program is to promote awareness and encourage the adoption of sustainable practices to mitigate pollution.

The event included a series of interactive activities such as awareness sessions and discussions, all focused on practical strategies to reduce air, water, and soil pollution. To further reinforce the message of environmental responsibility, volunteers also organized a cleanliness drive, emphasizing the importance of proper waste management and eco-friendly habits. The villagers showed keen interest and pledged to implement greener practices in their everyday lives.

Through this initiative, DCE Gurugram reaffirmed its commitment to environmental conservation by inspiring community-driven efforts for a cleaner and healthier future. The program not only spread awareness but also encouraged collective action, fostering a sense of responsibility toward sustainable living and environmental preservation.

https://ggnindia.dronacharya.info/events/Pollution-Control-Day-Awareness-Program-2-December-2023.aspx?Month=Dec&Year=2023

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Energy Conservation Day Awareness Program

14th December 2023

NSS Wings of **Dronacharya College of Engineering** successfully organized an **Energy Conservation Day Awareness Program** in the nearby village of **Khentawas** on **December 14, 2023**. Led by **Dr. Anupam Dalal**, along with **15 NSS volunteers**, the initiative aimed to educate and inspire the local community about the significance of **energy conservation** and **sustainable living**.

With the theme **"Save Energy Today for a Better Tomorrow,"** the program emphasized innovative approaches to minimizing energy consumption and adopting eco-friendly solutions. Villagers actively engaged in interactive sessions on renewable energy sources, energy-efficient technologies, and practical conservation methods. The event effectively raised awareness encouraging residents to integrate sustainable energy practices into their daily lives.

This initiative not only reinforced the college's dedication to environmental responsibility but also contributed towards building a greener and more sustainable future.

https://ggnindia.dronacharya.info/events/Energy-Conservation-Day-Awareness-Program-December-14-2023.aspx?Month=Dec&Year=2023

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Awareness Session on Water Conservation

22nd March 2024

NSS Units of Dronacharya College of Engineering organized an awareness session on the importance of saving water on **22nd March 2024,** in observance of **World Water Day.** The session was conducted in **Babra Bakipur,** the college's adopted village, with the objective of educating the local community on sustainable water management practices. 12 NSS volunteer participated.

This initiative aimed to highlight the significance of water conservation and equip villagers with practical knowledge to reduce water wastage in their daily lives.

The session focused on the global water crisis, the urgent need for conservation, and effective water-saving techniques that individuals can implement. Volunteers from the NSS unit actively engaged with the community through interactive discussions, live demonstrations, and awareness campaigns, emphasizing the importance of responsible water usage. The program also provided insights into rainwater harvesting, wastewater management, and efficient irrigation techniques, ensuring that the villagers gained valuable knowledge on preserving this essential resource.

By raising awareness and promoting proactive measures for water conservation, the event successfully empowered villagers to embrace sustainable water management practices. It not only educated the community on the importance of preserving water resources but also underscored the college's commitment to driving meaningful societal change. The initiative reinforced the shared responsibility of safeguarding water for future generations, inspiring collective action toward a more sustainable future.

https://ggnindia.dronacharya.info/events/Awareness-Session-Water-Conservation-22-March-2024.aspx?Month=Mar&Year=2024

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Earth Day Celebration

22nd April 2024

NSS Units, Dronacharya College of Engineering, Gurugram in collaboration with **One step Towards Peace** celebrated **World Earth Day 2024** on **22nd April 2024** to raise awareness about environmental issues and promoting sustainability. It emphasized the importance of protecting planet through actions like conservation, recycling, and advocating for policies that safeguard Earth's natural resources for future generations. NSS volunteers planted trees in the adopted villages. The theme of the celebration was **'Planet vs Plastics.' 130 Students** and **25 faculty members** participated in the celebration activities.

The celebration began with an enlightened speech by Dr. Pooja Sharma (NSS PO, DCE). She illuminated the students and emphasized the urgency of environment preservation and the power of collective action. Students also presented their views on recycling, composting, and reducing carbon footprints.

Afterwards, a campus-wide tree-planting initiative was carried. Students, faculty, and staff jointly planted a variety of indigenous trees, symbolizing growth, renewal, and commitment to preserving the environment.

To further engage students, a "green pledge" campaign was launched. Attendees were encouraged to make individual commitments to reduce waste, conserve energy, and adopt eco-friendly practices in their daily lives. This initiative generated significant enthusiasm, fostering a sense of personal responsibility.

The event reinforced the belief that small, concerted efforts can lead to a greener and more promising future for planet Earth.

Benefit/Outcome: Students got a deeper understanding of plastic free environment and various ways of protecting the Mother Earth.

https://ggnindia.dronacharya.info/events/World-Earth-Day-2024_22nd-April.aspx?Month=Apr&Year=2024

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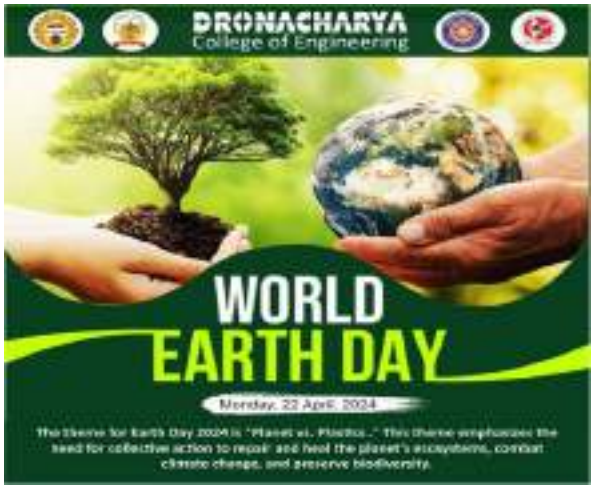

World Environment Day

5th June 2022

To celebrate World Environment Day Institution's Innovation Council (IIC), Ministry of Education (MoE), Dronacharya College of Engineering, Gurgugram organized **"Environment Awareness March and Plantation Drive"** at college campus and nearby areas. The world environment day is celebrated every year on **5th June 2022**, to raise global awareness towards protecting our Earth's natural habitat. Knowledge is imparted to take positive environmental action to protect nature and the "Planet Earth". It is a day that reminds everyone on the planet to get involved in environment friendly activities. Trees are the foremost source for producing the oxygen in environment, they help to reduce the level of carbon dioxide. As the whole world is facing the problem of global warming and to recover from such problem planting the trees has become one of the most important aspects in today's scenario. People came together to pledge towards building a greener planet.

On this Occasion **Prof. (Dr.) Anupam Dalal** advised the volunteers to think differently for the Society to make positive changes and to make environment pollution free. Two volunteers **Mr. Jabeez** and **Shekhar Suman** from ME 6th Semester also delivered a presentation on World Environment Day. Through the presentation, importance of planting new trees and protecting the existing ones was explained. After the inspirational words of speakers, volunteers took Pledge to save Environment. After that all advanced towards the place where tree plantation took place. A very first tree planted by **Registrar Prof. Hansraj** and then, NSS Program Officer **Prof. (Dr.) Ashok Kumar, Prof. (Dr.) Anupam Dalal, Prof. Pooja Sharma, Prof. (Dr.) Ansari, Prof. (Dr.) Vimla Yadav** also planted trees. Around 50 Plants were planted by faculty, Staff and volunteers. Students of all branches participated and celebrated world environmental day enthusiastically. They were asked to plant a sapling to create a green corner. A lot of enthusiasm was seen in the students. The event was conducted successfully with whole hearted participation and awareness about plants and plantation of trees.

https://ggnindia.dronacharya.info/events/Report-world-environment-day-June-2022.aspx?Month=Jun&Year=2022

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NSS Orientation Programme and Tree Plantation

24th August 2022

The **National Service Scheme (NSS) Orientation Program** was organized on **24th August, 2022** at **Dronacharya College of Engineering, Gurugram.**

The main motive of NSS is to develop student's personality through community service.

NSS is a voluntary association of young people in Colleges, Universities and at +2 level working for a campus-community linkage. The basic principle of the NSS programme is, that it is organized by the students themselves and both students and teachers through their combined participation in community service, get a sense of involvement in the tasks of nation building.

The inaugural event was also dignified by the presence of **Prof. (Dr.) B. M. K. Prasad,** Principal, **Dronacharya College of Engineering, Gurugram**. NSS Coordinator, Dr. Anupam Dalal welcomed external NSS officials. Official started the Orientation Program with underlying the objective of the program. He also awaked about the philosophy of NSS to all the attendees. He also briefed about the roles and responsibilities of the NSS volunteers towards the nearby areas. He also urged the students to focus on honesty, punctuality and dedication in social services.

After the Orientation Program, a tree plantation drive was carried in the campus. Everyone present there planted a sapling and watered the plants.

Towards the last, NSS volunteers pledged to the well-being of the society with sincerity and dedication followed by National Anthem.

https://ggnindia.dronacharya.info/events/Tree-Plantation-Day-24-Aug-2022.aspx?Month=Aug&Year=2022

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National Unity Day

Clean India 2.0

1st - 31st October 2022

NSS units, Dronacharya College of Engineering, Gurugram, organized a **"Clean India 2.0"** campaign as Azadi Ka Amrit Mahotsav (AKAM) initiative in line with the guidelines of Ministry of Youth Affairs & Sports in collaboration with Sports Authority of India. The event was held in the month of October from **1st to 31st October, 2022.**

To commemorate the birth anniversary of Mahatma Gandhi, Swachh Bharat Abhiyan was organized in the campus and in the nearby areas. The campaign's initiative was to accelerate the actions to spread good words about cleanliness needs and habits. The students broomed the nearby localities and picked garbage and disposed them properly. They also made the locals aware about the importance of clean and green environment.

The event was inaugurated by **Dr. Isha Malhotra** (Principal, DCE, Gurugram) The motivated opening speech about need for cleanliness was delivered by **Dr. Anupam Dalal** (Program Officer). She told about the benefits of cleanliness in the environment. Students were made aware about importance of clean surroundings, ways to control pollution, and methods of safe disposal of solid and liquid waste were also conveyed. She presented an all-inclusive list of all the events and activities to be conducted throughout the month. Information regarding various events and competitions viz: Essay competition, unity run, Rangoli making competition, Swachh Bharat Abhiyan, etc. were also disseminated to all.

The platform for all the activities and events was made open to all the staff members and students. They all enthusiastically participated in all the activities and competitions. Winners of various competitions held across the month were announced and applauded for their efforts.

https://ggnindia.dronacharya.info/events/National-Unity-Day-Clean-India-2-1-OCT-2022.aspx?Month=Oct&Year=2022

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Tree Plantation Drive

23rd December 2022

Dronacharya College of Engineerng, Gurugram conducted **"Tree Plantation Drive"** on **23rd December 2022** to celebrate national farmer's day. All the NSS volunteers, faculty members, staff members and students participated in the drive enthusiastically.

The main objective of the drive was to make students aware of their intellectual, social, and emotional responsibility towards environment.

All the participants were given saplings by NSS volunteers. Students helped each other in planting saplings. All the saplings were planted in the ground After planting all the volunteers, faculty members, staff members and students took oath to plant more and more trees on special occasions such as their birthdays and other family ceremonies in upcoming days. Some volunteers shared their experiences.

Such initiatives taken by college will undoubtedly aid in promoting healthy mental and social health in youth so that they can connect with their peers, elders, community, and environment.

https://ggnindia.dronacharya.info/events/Tree-Plantation-Drive-DEC-2022.aspx?Month=Dec&Year=2022

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National Pollution Control Day Awareness Programme

2nd December 2022

NSS Units of **Dronacharya College of Engineering** organized a **National Pollution Control Day Awareness Programme** in **Patli**, a nearby village on **2nd December 2022.** The event saw enthusiastic participation from **NSS volunteers, students, and faculty members**, all united in their mission to raise awareness about environmental conservation and pollution control.

The initiative aimed to educate the local community on the **harmful effects of pollution** and emphasize the **importance of sustainable practices** in daily life.

The programme featured **interactive discussions, awareness rallies, and informative presentations**, providing villagers with **practical solutions** to minimize pollution. NSS volunteers actively engaged with the residents, highlighting key issues such as **responsible waste disposal, reduction of harmful emissions, and the significance of maintaining cleaner surroundings**. The discussions encouraged the adoption of eco-friendly alternatives and collective action toward preserving the environment.

Through this impactful initiative, **Dronacharya College of Engineering** reaffirmed its **commitment to environmental sustainability and community welfare**. By fostering awareness and encouraging responsible behavior, the event inspired **collective efforts toward a greener and healthier future**. The NSS Unit remains dedicated to conducting such awareness programs, strengthening its role in promoting environmental consciousness and social responsibility.

https://ggnindia.dronacharya.info/events/National-Pollution-Control-Day-Awareness-Programme-2-Dec-2022.aspx?Month=Dec&Year=2022

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National Energy Conservation Day

14th December 2022

NSS Units Dronacharya College of Engineering, Gurugram organized a **session** on **"National Energy Conservation Day"** on **14th December, 2022**. **105 students** attended the session.

Ms. Neha Verma (Asst. Prof., ECE Department) was the speaker of the session. She told students about the importance of conserving renewable and non-renewable energy resources which is a vital aspect of human survival. Future is not secure without wisely and appropriately using the resources available. So, proper check is necessary for utilization of natural resources. She said, human habits and practices are keen to conserve energy. It does not occur to them that careless outlay of energy can be disastrous for the future generation. She further explained that conservation of energy reduces pollution in the environment also.

There are many ways in which conservation of energy can happen. Installing solar panels, solar trees and solar street lights are one of the ways to generate electric energy which must be adhered to strictly. Other than this, proper usage of tap water while brushing teeth, switching off lights and fans when not in use, repairing water leaks, using LED lights are some of the measures that must be taken care for energy conservation.

Lastly, students were asked to share their views on need for energy conservation and the ways through which energy could be conserved. Overall the session was very informative for all.

https://ggnindia.dronacharya.info/events/National-Energy-Conservation-Day-DEC-2022.aspx?Month=Dec&Year=2022

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Earth Day Celebration

22nd April 2023

NSS Units, Dronacharya College of Engineering, Gurugram celebrated **"Earth Day"** on **22nd April, 2023**. The theme of the celebration was **'Invest in our Planet.' 70 Students** and **12 faculty members** participated in the celebration activities.

The celebration began with an enlightened speech by Dr. Pooja Sharma (NSS Coordinator.) She illuminated the students and emphasized the urgency of environment preservation and the power of collective action. Students also presented their views on recycling, composting, and reducing carbon footprints.

Afterwards, a campus-wide tree-planting initiative was carried. Students, faculty, and staff jointly planted a variety of indigenous trees, symbolizing growth, renewal, and commitment to preserving the environment.

To further engage students, a "green pledge" campaign was launched. Attendees were encouraged to make individual commitments to reduce waste, conserve energy, and adopt eco-friendly practices in their daily lives. This initiative generated significant enthusiasm, fostering a sense of personal responsibility.

The event reinforced the belief that small, concerted efforts can lead to a greener and more promising future for planet Earth.

https://ggnindia.dronacharya.info/events/Earth-Day-22-April-2023.aspx?Month=Apr&Year=2023

Principal
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Farrukh Nagar, Gurgaon.

World Environment Day

5th June 2021

NSS Unit of Dronacharya College of Engineering, Gurugram celebrated **"World Environment Day"** on **5th June, 2021**. **70 students** along with **5 faculty members** participated in the celebration activities.

The program started with awareness about the importance of protecting and conserving planet Earth by **Prof. Anupam Dalal** (NSS Coordinator.) They were made aware about abolishing of single use plastic, methods of making compost, importance of waste management and planting of trees. Various activities were organized under her mentorship. Students were asked to plant saplings at various points in the nearby areas of their residence and also were explained the benefits of planting trees which is very crucial for prevention of global warming.

Everyone participated in the good cause with full zest.

https://ggnindia.dronacharya.info/events/World-Environment-Day-05-June-2021.aspx?Month=Jun&Year=2021

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wachhta Pakhwada

1st October 2021

To spread the message of cleanliness and hygiene across the country, **NSS unit** of **Dronacharya College of Engineering, Gurugram** observed **"Swachhta Pakhwada"** on **1st October, 2021**. Swachhta Pakhwada is an initiative by the Indian Government to promote cleanliness and sanitation across the country. **146 students** participated in the campaign.

The Swachhta Pakhwada campaign aimed to create awareness among the nearby areas of the college about the importance of cleanliness and sanitation. It encourages them to take active participation in keeping their surroundings clean and hygienic. The campaign also focuses on creating a sense of responsibility towards the environment and promoting sustainable practices. Students cleaned the college campus and the nearby areas in addition to spreading awareness about cleanliness.

During the Swachhta Pakhwada, various activities were organized by the college to spread awareness about clean and green environment. The activities included cleaning of streets, roads, public places, and water bodies. Awareness campaign was conducted through rallies, seminars, and workshops to educate people about the importance of cleanliness and sanitation.

The Swachhta Pakhwada also emphasized on the importance of waste management. Students guided the people to segregate their waste at source and dispose of it properly. The campaign also promoted the use of eco-friendly products and encouraged people to focus on 3 R's of waste management: reduce, reuse, and recycle.

The campaign was successful as it brought about a significant change in the behavior of people towards cleanliness and hygiene and following sustainable practices.

https://ggnindia.dronacharya.info/events/Swachhta-Pakhwada-1st-Oct-2021.aspx?Month=Oct&Year=2021

Principal
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Plastic Waste Free Campaign

15th November 2021

NSS Unit of **Dronacharya College of Engineering, Gurugram** organized a **"Plastic Waste Free Campaign"** on **15th November, 2021**. **40 students** participated in the campaign.

Dr. Isha Malhotra (Principal-DCE) illuminated the students and told that Plastic waste is a major problem that affects our planet. She told that the use of plastic has become so pervasive that it is now one of the most significant sources of pollution in the world. Plastic takes hundreds of years to decompose, and as it does so, it discharges harmful chemicals into the environment.

The Plastic Waste Free Campaign was an initiative aimed at raising awareness about the dangers of plastic waste and encouraging people to take action to reduce their use of plastic. The campaign was a call to action for taking steps towards reducing plastic waste and finding alternative solutions to plastic.

The three R's of waste management were told to the students and they were illuminated towards reducing plastic waste and not to use single-use plastics. Single-use plastics are items like straws, water bottles, and plastic bags that are used once and then discarded. These items are a significant source of plastic waste and contribute to the pollution of oceans, rivers, and other natural habitats.

To reduce plastic use, students were advised to use reusable items such as cloth bags, reusable water bottles, and metal straws.

In addition to reducing consumption of single-use plastics, steps to recycle and properly dispose of plastic waste were also taught to them. Recycling is an essential step towards reducing plastic waste and can help to reduce the amount of plastic that ends up in oceans and natural habitats.

Students took initiative in making the locals aware about the ill-effects of using plastic and also participated in the community clean-up efforts.

Students and the community were highly benefitted from the campaign.

https://ggnindia.dronacharya.info/events/Plastic-Waste-Free-campaign-15-Nov-2021.aspx?Month=Nov&Year=2021

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International Forest Day

21st March 2022

Dronacharya College of Engineering, Gurugram celebrated **International Forest Day 2022** on **21st March 2022.**

Faculty members and students went to the nearby village to create awareness among the villagers importance of forests and the role they play in our ecology as well as the economy

The theme of International Forest Day for 2022 is **"Forests and sustainable production and consumption".**

Faculties members addressed the people and said, forest play an important role in sustaining life. Forest are the source of food, water medicine, provide shelter to animals as well as human beings Forest sustainable management and their use of resources are key to combating climate change, and to contributing to the prosperity and well-being of current and future generations. Forest can reduce effects of floods, climate change etc. Forest also play unprecedented role in poverty alleviation and in the achievement of the Sustainable Development Goals (SDGs).

After the interaction, faculty members, students and villagers together took the pledge to save forest and protect our real treasure for our future generation.

In the end, students and faculty members planted sapling in the village.

"Adopt the pace of nature. Her secret is patience." - Ralph Waldo Emerson

https://ggnindia.dronacharya.info/events/Forest-Day-MAR-2022.aspx?Month=Mar&Year=2022

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Plastic Waste Free Campaign

18th August 2020

NSS Unit of **Dronacharya College of Engineering, Gurugram** organized **"Plastic Waste Free Campaign"** on **18th August, 2020**. **10 NSS volunteers** along with **2 NSS coordinators** participated in the campaign.

The main motive behind the conduction of campaign was to spread awareness about the ill effects of using plastic on the environment. The volunteers went to the nearby village to create awareness on harmful implications of plastic-waste and plastic use. The participants demonstrated easy, simple and quick way of making beautiful handmade bags made from paper and other bio-degradable materials available at home. Students also addressed the benefits of using green bags as alternative to plastic bags in order to solve the problem of accumulation of plastic waste. Billboards depicting 'Say no to Plastic' were also displayed in the college campus to make the plastic waste free campus.

All the students actively participated in the campaign to make the campus plastic free by collecting pieces of plastic in the campus and in the nearby areas and arranging for its proper disposal.

https://ggnindia.dronacharya.info/events/Plastic-waste-free-campaign-18th-August-2020.aspx?Month=Aug&Year=2020

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Swachhta Pakhwada

2nd October 2020

NSS Unit of **Dronacharya College of Engineering, Gurugram** celebrated **"Swachhta Pakhwada"**; a cleanliness and awareness campaign that aimed to create awareness among people about the importance of cleanliness, hygiene and sanitation. **20 NSS volunteers** along with **2 faculty members** participated in the campaign.

The objective of Swachhta Pakhwada was to instill a sense of responsibility and accountability in people towards maintaining cleanliness and hygiene in their surroundings.

During Swachhta Pakhwada, various activities were organized to promote cleanliness and hygiene in the college and in the nearby areas. Cleanliness drives, awareness programs and rallies were some of the activities conducted to spread awareness. Students guided the locals to make their areas open defecation free and also guided them the importance of clean and green environment by way of beautifully designed posters.

The campaign helped in creating awareness among people about the importance of cleanliness and hygiene in their daily lives.

https://ggnindia.dronacharya.info/events/Swachhta-Pakhwada-2nd-October-2020.aspx?Month=Oct&Year=2020

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International Forest Day

21st March 2021

NSS Unit of **Dronacharya College of Engineering, Gurugram** celebrated **"International Forest Day"** on **21st March, 2021**. **25 students** under the guidance of NSS faculty coordinators **Dr. Anupam Dalal** and **Prof. Pooja Sharma** participated in the celebration.

The theme of International Forest Day for 2022 is "Forest restoration: a path to recovery and well-being"

Initially NSS Coordinator **Dr. Anupam Dalal** enlightened the students towards benefits of restoring forests and plantation of trees. She also told about the medicinal and commercial use of the plants.

Afterwards, all the students planted saplings in the college and nearby areas and watered them.

https://ggnindia.dronacharya.info/events/International-Forest-Day-21-March-2021.aspx?Month=Mar&Year=2021

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"World Water Day"

22nd March 2021

NSS Unit of Dronacharya College of Engineering, Gurugram celebrated **"World Water Day"** on **22nd March, 2021**. **85 students** participated in the celebration.

Prof. Anupam Dalal (NSS Coordinator) was the resource person for the awareness cum celebration activities. She delivered a presentation on "Need for conserving Water" to the participants. She also gave valuable suggestions regarding the methods to procure rain water, methods for recycling the waste water and constructing and maintaining ground water pits. She also highlighted the urgency to conserve water for the future generations and ways to use water efficiently.

Afterwards, under the guidance of **Prof. Ashima Mehta (CSE Dept.)**, the participants moved to the ground and understood the correct way of watering plants. Student volunteers were also asked to present their valuable thoughts on conserving water by way of posters.

Students learned a lot from the program and took pledge towards conserving water and making others also aware to protect the most valuable natural resource of the Earth.

https://ggnindia.dronacharya.info/events/Water-Day-22-March-2021.aspx?Month=Mar&Year=2021

Principal
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Earth Day Celebration

22nd April 2021

Dronacharya College of Engineering, Gurugram celebrated **"Earth Day"** on **22nd April, 2021**. The theme of the celebration was 'Restore Our Earth' which focuses on the measures that could be taken to control the damages caused to Planet Earth. **60 students** participated in the online celebration.

Dr. Isha Malhotra (Principal – DCE, Gurugram) started the session and throwed light upon the need to protect Mother Earth. She made the students aware about environmental issues, importance of preserving and conserving natural resources, importance of segregation of waste and its proper disposal and carry sustainable and eco-friendly practices.

A thought presentation session also took place wherein students were asked to speak on any of the topics related to environmental issues such as climate change, air and water pollution, and deforestation. The students showed great enthusiasm and creativity in expressing their thoughts and ideas on these important issues.

The celebration concluded with a pledge-taking ceremony, where students and faculty members pledged to adopt eco-friendly practices and promote sustainability in their daily lives.

Overall, the celebration not only created awareness about environmental issues but also motivated everyone to take positive actions towards restoring our Earth.

https://ggnindia.dronacharya.info/events/Earth-Day-Celebration-22-April-2021.aspx?Month=Apr&Year=2021

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Plantation Drive

5th June 2019

In order to sensitize students towards the need to preserve our environment and ecology**, NSS Wing, Dronacharya College of Engineering, Gurgaon** organized the event of **"Plantation Drive"** at nearby village on **5th June 2019.**

Due to tremendous increase in the pollution level and global warming, a tree plantation drive was organized. The objective of tree plantation is to save the endangered environment and to beautify our life.

Students went to the nearyby village and guided people trees are valuable gifts of nature. They benefit people in many ways. Students told trees are the foremost source for producing oxygen in the environment, they help to reduce the level of CO2. As the whole world is facing the problem of global warming and another environmental-related issue thus recover from these problem planting trees is most important.

Approx 100 saplings were planted on the day by the students and faculty members.

https://ggnindia.dronacharya.info/events/Platation-Drive-JUN-2019.aspx?Month=June&Year=2019

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Plastic Waste Free Campaign (Swachhata Hi Seva 2019)

11th - 27th September 2019

Dronacharya College of Engineering, Gurgaon organized **"Plastic Waste Free Campaign (Swatchhata Hi Sewa 2019)"** as per the guidelines issued by AICTE from **11th - 27th September 2019.** Numbers of programs were organized by the college to commemorate the occasion.

In the inaugurating ceremony, Hon'ble Principal **Prof. (Dr.) B. M. K. Prasad** stated, the college would encourage the volunteers by providing all possible help in the service. He insisted the college fraternity to take up social problems as a challenge and added that the college has the maximum number of volunteers in the field of social and national services.

Campaign started with a special plastic waste awareness generation activity where in students of the college went around in the nearby villages to educate citizens on waste being generated by use of plastic. Student's also advised not to use plastics. Next sharamdaan was organized in the campus where the students picked up the waste and threw it in the dustbin. Continuing the campaign an essay competition on the subject "Plastic Waste Free India" was also organized in the college. The students actively participated in the essay writing competition and generated some of the innovative ideas for Plastics Waste Free India.

In the end an oath taking ceremony was also held in the college where the students took pledge to make India Plastic Waste Free India.

https://ggnindia.dronacharya.info/events/Plastic_Waste_14102019.aspx?Month=Sep&Year=2019

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Campaign: One Student One Tree

5th & 11th December 2019

Dronacharya College of Engineering, Gurugram conducted a campaign **"One Student One Tree" on 5th & 11th December 2019 as per the directives of** Minister HRD Minister, Govt. of India and AICTE.

The campaign is in line with the Hon'ble Prime Minister **Narendra Modi's** idea of a green and healthy environment.

Under the campaign, students and faculty member planted the tree in college campus and in nearby areas. The name of the tree was given on the students/faculty member who planted the tree. The same person who planted the tree, will also the nurture the tree whole year.

Faculty member of the college also explained the importance of tree plantation. Further faculty member told plants should be grown to keep the environment green, clean, safe and healthy.

https://ggnindia.dronacharya.info/events/One-student-one_tree.aspx?Month=Dec&Year=2019

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Swachhta Pakhwada 2020

16th - 30th January 2020

As per the direction of the Ministry of Human Resource Development, Govt. of India and Higher Education Department the **Swachhta Pakhwada 2020** was organized from **16th - 30th January 2020** in **Dronacharya College of Engineering, Gurugram**.

NSS Wing, Dronacharya College of Engineering, Gurugram organized various event like Swachhta Pledge, Plogging, Poster making Competition, Cleanliness drive, Rally on Swachhta under this 15 days' swachhta initiative.

The event began with Swachhta Pledge taking ceremony, faculty members, staff and students took a pledge to keep surrounding clean. Next Plogging event was organized where faculty members and students pick up the litter while jogging.

A poster making competition was organized during 15 days' swachhta initiative to spread awareness on cleanliness.

In the cleanliness drive faculty members and students cleaned the college campus, hostel area and their surrounding area.

NSS Wing also organized a rally on cleanliness in adopted village (Patli, Khentawas) of the college.

Towards the end of the event, tree plantation was done by the students and faculty members

https://ggnindia.dronacharya.info/events/Swachhta-Pakhwada-NSS.aspx?Month=Jan&Year=2020

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