



7.1.6

Quality audits on environment and energy are regularly undertaken by the Institution and any awards received for such green campus initiatives:

1. Green audit

ISO Certificates for Quality Management Systems and Environmental Management Systems

TRANSPACIFIC CERTIFICATIONS LIMITED



Certificate of Registration

This is to certify that
Quality Management System
of
DRONACHARYA GROUP OF INSTITUTIONS
B – 27, Knowledge Park –III,
Greater Noida, U.P. (INDIA).

complies with the requirements of
ISO 9001:2015

This certificate is valid concerning all activities related to:
Provision for Importing Quality Education in the Field of Engineering & Management.
ANZSIC Code: N 8432

14213 Certificate No.	Nov 29, 2018 Date of this Certificate	Nov 24, 2019 *Next Audit Due Date
Nov 25, 2015 Date of Initial Registration	Nov 24, 2021 Certification Expiry Date	 Managing Director/Director






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(Note:-There are limitations to the sampling methodology and some of the facts may not have come to the notice of the audit team. This does not mean that the system is free from other non-conformities. To maintain the management system is the responsibility of the client. Some other non-conformity may also exist. This report and related documents are prepared only for TCL client and for no other purpose. TCL does not accept or assure any responsibility, legal or otherwise, or accept any liability for, or in connection with any other purpose.)

22 Nov, 2018 Date of issue	21 Nov, 2021 Valid until	E1076 Certificate No.	 Managing Director/Director
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Director
Dronacharya Group of Institutions
27, KP-III, Greater Noida-201306



DRONACHARYA
Group of Institutions
Approved by : All India Council for Technical Education
Affiliated to : Uttar Pradesh Technical University, Lucknow

Green Campus Audit Documents



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Greenobin Recycling Pvt. Ltd.
OFF 1-2, First Floor, Above Pratham Ultrasound
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Badshapur, Gurgaon

To
THE PRINCIPAL
DRONACHARYA GROUP OF INSTITUTIONS G
B-27, Knowledge Park-III,
Greater Noida,
Uttar Pradesh

DT: 28-07-2017

SUB: OLD RECORDS RECYCLING/PULPING

This is to confirm that we have collected **8,025 kilograms** of Old Documents and answer sheets on 27 JULY, 2017 in presence of institution staff at COLLEGE CAMPUS: B-27, Knowledge Park-III, Greater Noida, Uttar Pradesh

We also confirm that the all the waste paper has been successfully channelized for recycling.

Regards
Yours Faithfully
For Greenobin Recycling Pvt Ltd.



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Director
Dronacharya Group of Institutions
27, KP-III, Greater Noida-201306



Energy Audit Report of Dronacharya Group of Institutions

B-27, APJ Abdul Kalam Rd, Knowledge Park III, Greater Noida, Uttar



Conducted by

Tetrahedron Manufacturing Services


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

Call: [089841 89814](tel:08984189814)

Email: - tms@tetrahedron.in

<https://www.tetrahedron.in/>

For Tetrahedron Manufacturing Services Pvt. Ltd.


Authorized Signatory



Energy Audit Report

DISCLAIMER

This report is based on the information provided by the management of **Dronacharya Group of Institutions** & on-site observations on **29 April 2019 & 30 April 2019**. 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

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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A. ACKNOWLEDGEMENT

Energy Audit Team of **Tetrahedron Manufacturing Services Pvt Ltd.** Expresses Our Sincere Gratitude to Management of **Dronacharya Group of Institutions**, for providing us an opportunity to conduct an energy audit of their organization located In B-27, APJ Abdul Kalam Rd, Knowledge Park III, Greater Noida, Uttar Pradesh 201306. We are grateful to Dr.S.K.Srivastava 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.

Energy Audit Report

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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Energy Audit Report

B. 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 Group of Institutions** 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	237356
Annual electricity cost/annum	INR	2512389

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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	2636.55	32429.56	170887.5	5.3
2	Replace conventional tube with energy efficient tube	7752.8	83730	99113	1.2
3	Replace LCD monitor with LED monitor	60750	747225	2250000	3
4	Replacement of old pumps with energy efficient pumps	5500	58190	60000	1

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Energy Audit Report

C. 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 Group of Institutions, total **electricity bill crossed INR. 28 Lakhs from Apr,18 to Mar,19** 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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Energy Audit Report

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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Energy Audit Report

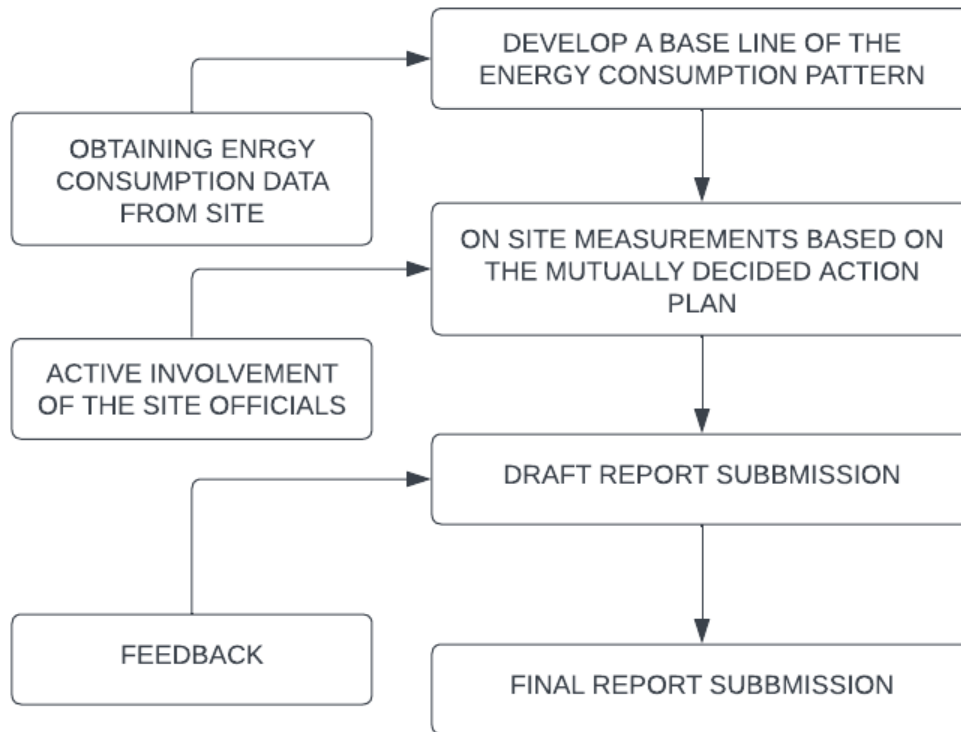


Figure 1 Energy Audit Flowchart

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 Group of Institutions. This study is mainly carried out to identify saving areas in Dronacharya Group of Institutions 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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Energy Audit Report



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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Energy Audit Report

2. Description and Energy Consumption

2.1 About Dronacharya Group of Institutions :

Dronacharya group of institutions Greater Noida was established in 2006 by Smt. Anguri Devi Charitable Trust. Dronacharya Group of Institutions, Greater Noida is affiliated with Dr. A. P. J. Abdul Kalam Technical University (AKTU), Lucknow and the institute is approved by the All- India Council for Technical Education (AICTE). It offers undergraduate and postgraduate courses such as B.Tech, MBA, Dronacharya Group of Institutions admissions are based on the candidate's performance in entrance exams.

Dronacharya Group of Institutions Greater Noida Facilities

The Dronacharya Group of Institutions in Greater Noida 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.

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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.



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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 Group of Institutions
2	Address	B -27 Knowledge Park -III , Greater Noida
3	Contact Person	Dr.S.K.Srivastava
4	Contact Phone number&	9910380113
5	E-mail	sk.srivastava@gnindia.dronacharya.info
6	Web site	www.dronacharya.info
7	Type of Building	Educational Institute
8	Annual Working Days	225
9	No: of Shifts	Morning
10	No: of students enrolled	1350
11	No: of teaching staff	127
12	No: of non-teaching staff	70
13	No: of departments	9
14	No of UG courses	B.Tech
15	No: of PG courses	MBA
16	Total campus area	51125 sq. meter
17	Total Built Up area	4084 sq. meter
18	No: of hostel students	Nil
19	No: of plants in college	1000
20	No: of various species	500
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 + IIInd F	13000 sq. meter
3	03 Block	IIInd F	5500 sq. meter



Energy Audit Report

2.2 Annual Energy Consumption

Electricity

Dronacharya Group of Institutions 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 Group of Institutions 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 350/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 18-19 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-18	50	52	70	0.97	26474	131783	10866	11869	927				13314	1331	132709	168082
May-18	50	52	105	0.97	37346	184801	35240	16661	1583						186383	272466
Jun-18	50	51	92	0.98	32489	191722	25525	16816	2221						193944	264331
Jul-18	50	52	100	0.97	35620	204910	31789	18040			441	3305			204910	287495
Aug-18	50	51	111	0.98	38365	237542	38264	20693	2405	12149					239948	320310
Sep-18	50	51	125	0.98	40182	245002	44692	21389	2759	28518					247761	319987
Oct-18	50	52	101	0.97	33345	206667	29868	18001	2852	24001					209518	261028
Nov-18	50	52	74	0.97	22110	132830	10851	11621	2400	15494					135230	159517
Dec-18	50	52	51	0.96	15864	112087		9596	1549	12795					113637	123203
Jan-19	50	52	48	0.96	15526	108024		9266	1280	12355					109304	119182
Feb-19	50	52	47	0.96	15450	109230		9351	1236	12468					110465	120327
Mar-19	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-2018 and minimum INR 96461 in month of Mar-2019.
- 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-18 Billed amount & Unit is maximum.
- 2) In Mar-19 Billed amount & Unit is minimum.

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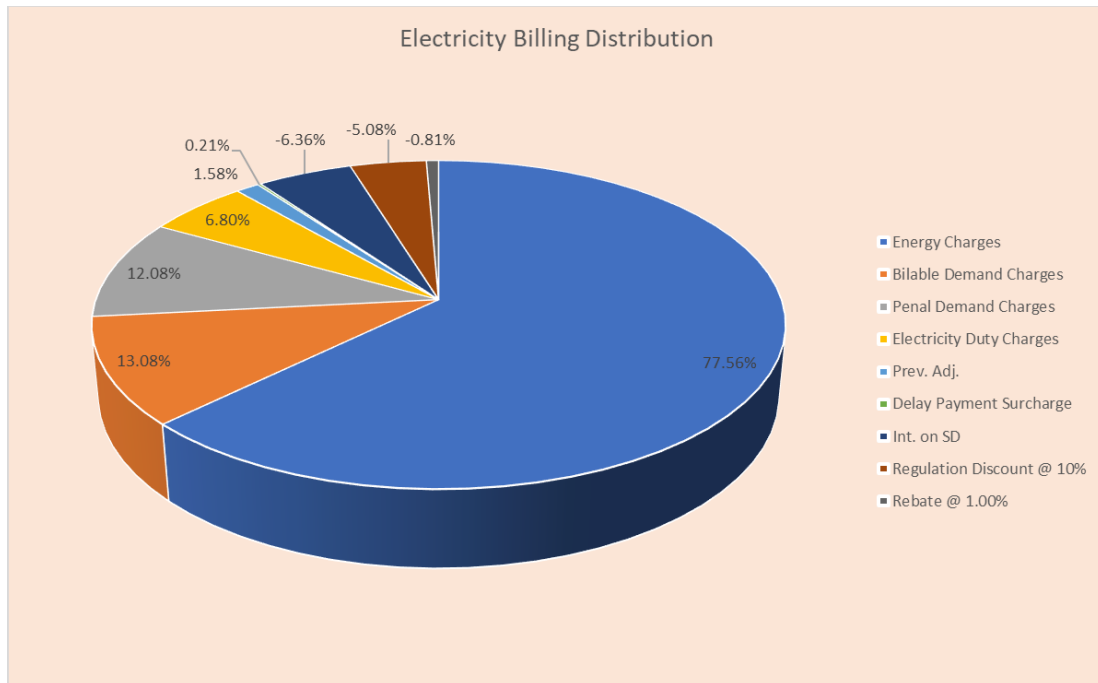


Figure 5 Billing Distribution

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-18 i.e. 125 kVA.
- 2) Demand is Minimum for Feb-19 i.e. 47kVA

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

Observation:

- 1) Penalty is Maximum for Sep-18 i.e. INR 44692
- 2) Among billable penalty months, March-2019 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

SI 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

SI NO	Name of Location	Type of Source	No of source	Each Wattage
1	Class Room	Tube light	285	20
2	Laboratory	Tube light	340	20
		2*2 LED Panel	157	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	292
2	Laboratory	155
3	Offices	67
4	Library	19
5	Canteen	12
6	Guest Room	5
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	46008	1863	891	10044
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	13035.6	393.3	469.8	2636.55
Energy tariff	INR	12.3	12.3	12.3	12.3
Monitory saving	INR	160337.9	4837.6	5778.54	32429.565
Investment/fan	INR	2800	3700	2750	2450
Total investment	INR	596400	42550	24750	170887.5
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



Energy Audit Report

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		275
Annual Power Savings	kWh	5500
Energy Tarrif	INR/kWh	10.58
Monetary Savings	INR	58190
Total Investment	INR	60000
Simple Payback Period	Years	1



Energy Audit Report

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	91125
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	747225
Investment	INR	2250000
Simple payback period	Yrs	3
Simple payback period	Months	36.1

Energy Audit Report

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: -

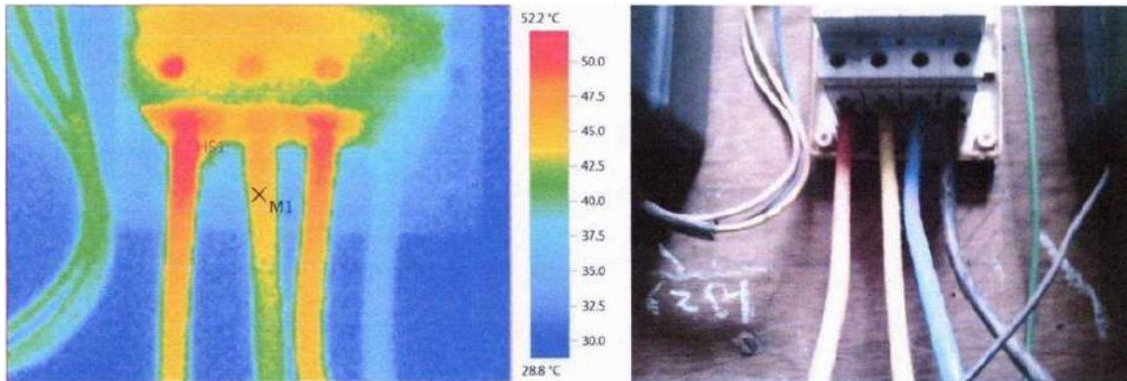
Visuals related to energy awareness should be implemented all across the facilities sample are as below: -



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Energy Audit Report



Picture parameters:

Emissivity: 0.99

Refl. temp. [°C]:20.0

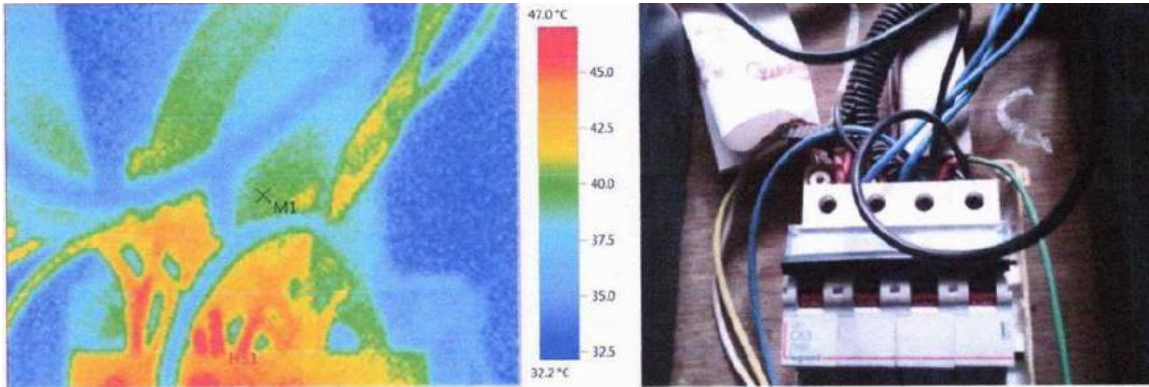
Picture markings:

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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V. K. Singh
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Energy Audit Report



Picture parameters:

Emissivity: 0.99

Refl. temp. [°C]:20.0

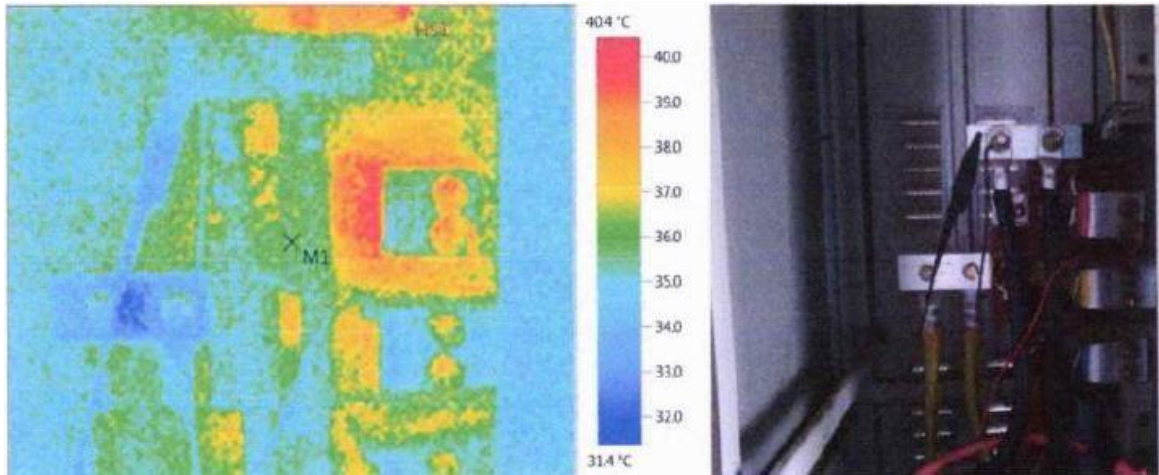
Picture markings:

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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V. K. K.
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Energy Audit Report

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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4. Clean and green campus recognitions / awards

Appreciation Mail from AICTE Regional officer for clean campus Initiative



Fri 22/09/2017 9:12 PM

Manoj Tiwari <manojtiwari@aicte-india.org>

Clean Campus Award initiative visit-Reg

To director@gnindia.dronacharya.info; info@dronacharya.info

Dear Sir/Madam,

WRT to the application submitted by your Institute expressing interest to participate in the "Clean Campus Award initiative" constituted by the council, a single man committee shall be visiting your institute on 23/09/2017. You are requested to cooperate with the committee by providing them with the necessary information and documents as asked by. It is also requested that arrangement for video recording shall also be made and the same as a CD/Pendrive shall be handed over to the expert on completion of the visit. Expecting your cooperation and wishing you Good Luck.

Regards

Dr M K Tiwari

Regional Officer,

AICTE - Northern Regional Office,

Govt. Polytechnic Campus, Adjoining Directorate of Technical Education,

Vikas Nagar, Kanpur, U.P.-208002

Mob: 07880312312

Phone No. : 0512-2585014/ 18/ 12

Fax: 0512-2582180

Director
Dronacharya Group of Institutions
27, KP-III, Greater Noida-201306



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Certificate of Appreciation Cleancampus Initiative



Director
Dronacharya Group of Institutions
27, KP-III, Greater Noida-201306



Certificate and Award for Winning Prize in Greater Noida Flower show



Director
Dronacharya Group of Institutions
27, KP-III, Greater Noida-201306



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5. Beyond the campus environmental promotion activities

"Ghar Vaapsee" - A Nukkad Natak



Students and Faculty members from Dept. Of Management Studies, Dronacharya Group of Institutions, Greater Noida staged "Ghar Vaapsee" - A Nukkad Natak on 6th September 2019 to showcase their talent during the observance of **Swachhta Pakhwada 2019**. The Pakhwada was an initiative of Ministry of Human Resource Development, GoI, observed during 1st to 15th September 2019 throughout India.

Director
Dronacharya Group of Institutions
27, KP-III, Greater Noida-201306



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Swachhta Pakhwada 2019



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NSS Volunteers Adventurous Camp



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Dronacharya Group of Institutions
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Plantation Program - 4th July 2016

On the call of the **Government of Uttar Pradesh** and **Dr. A. P. J. Abdul Kalam Technical University**, a Tree Plantation and Oath Taking Ceremony was organized at **Dronacharya Group of Institutions, Greater Noida** on **4th July 2016 11:00 AM**. The event was coordinated by **DGI NSS Wing Coordinator, Dr. S. K. Srivastava** **DGI SMILE CLUB Coordinator, Ms. Priyanka Upadhyay**.

On this occasion **Director, Prof. (Dr.) S. K. Bagga** addressed the gathering and urged them to make Mother Earth a more greener and safer planet to live.

As per the instructions of the Government an **Oath Taking ceremony** was also organized during the event. The event was an effort of State of Uttar Pradesh to create a World Record by planting 5 crore saplings in the State under **Green UP - Clean UP Mission** within 24 hours at 6500 different locations in one day.





Tribute to Dr. APJ Abdul Kalam

27th July 2017

DGI NSS wing of Dronacharya Group of Institutions, Greater Noida paid tribute to former President of India, **Dr. APJ Abdul Kalam** on his second Death Anniversary on **27th July 2017**.

Several saplings of wood trees were planted in the presence of **Dr. Ashish Soti, Director, Dronacharya Group of Institutions**. All the Heads of Departments, Faculty members and NSS Student Volunteers enthusiastically participated in planting the of **Plumeria and Ficus**.

Prof. Ashish Soti shared **Dr. Abdul Kalam's Visions**. **Prof. Soti** said that teaching is a very noble profession which shapes the character, caliber and future of an individual. **He suggested** that the students must keep a career advancement diary. They should write their goal in it, keep on writing continuous progress and strategy followed to achieve the goal. He stresses that one should not fear from failure & must develop strategies to overcome the failure. **Prof. Soti** said it the most important tribute to **Dr. A.P.J. Abdul Kalam** is to follow the path shown by him & contribute in development of the nation.

On this occasion, students also took 10-point pledge to follow the path of righteousness as advised by Honorable Vice - Chancellor, **Prof Vinay Kumar Pathak, Dr A.P.J. Abdul Kalam Technical University, Lucknow**.

The program was coordinated by **Mr. Apratim Singh (CSE-V), Dravid Nagi (CSE-III) and Divya Chaturevedi (CE-III), Neha Saxena (CSIT-III) and Vandana (ECE-III)**.



Tree Plantation Program 8th July 2018

On the call of the Government of **Uttar Pradesh and Dr. A. P. J. Abdul Kalam Technical University**, a Tree Plantation and Oath Taking Ceremony was organized at **Dronacharya Group of Institutions, Greater Noida on 8th July 2018**. The event was coordinated by

On this occasion Director, **Dr. Ashish Soti** addressed the gathering and urged them to make Mother Earth a more greener and safer planet to live.

As per the instructions of the Government an Oath Taking ceremony was also organized during the event. The event was an effort of State of Uttar Pradesh to create a World Record by planting 5 crore saplings in the State under Green UP - Clean UP Mission within 24 hours at 6500 different locations in one day.





Green Campus



Tree Plantation Drive

5th June 2021

NSS wings of Dronacharya Group of Institutions, Greater Noida carried “**Tree Plantation Drive**” on **5th June, 2021**. The honorable speaker of the session was Shri Vijaypal Baghel JI (The Green Man of India).40 students and faculty members participated in the drive.

Prof. (Dr.) K.K Saini (Director of DGI, Greater Noida) welcomed Shri Vijaypal Baghel and started the celebration by giving the inaugural speech.

Next, **Shri Vijaypal Baghel** stated in his speech, the importance of planting trees. He stated that this is the opportunity for everyone to realize the responsibility to care for the Earth and to become representatives of change. While concluding his speech he said that change can happen only if it is affected at the community level.

Students and faculty members participated with great zeal in support of the environment with planting of saplings, an initiative taken by the Director along with the students in the college

premises. In lieu of this, students were inspired and motivated to plant more trees in and around their own surroundings and also to spread the message to plant more trees to others outside the college contributing to a healthier and cleaner society which in turn will make a greener and safer Earth.



