

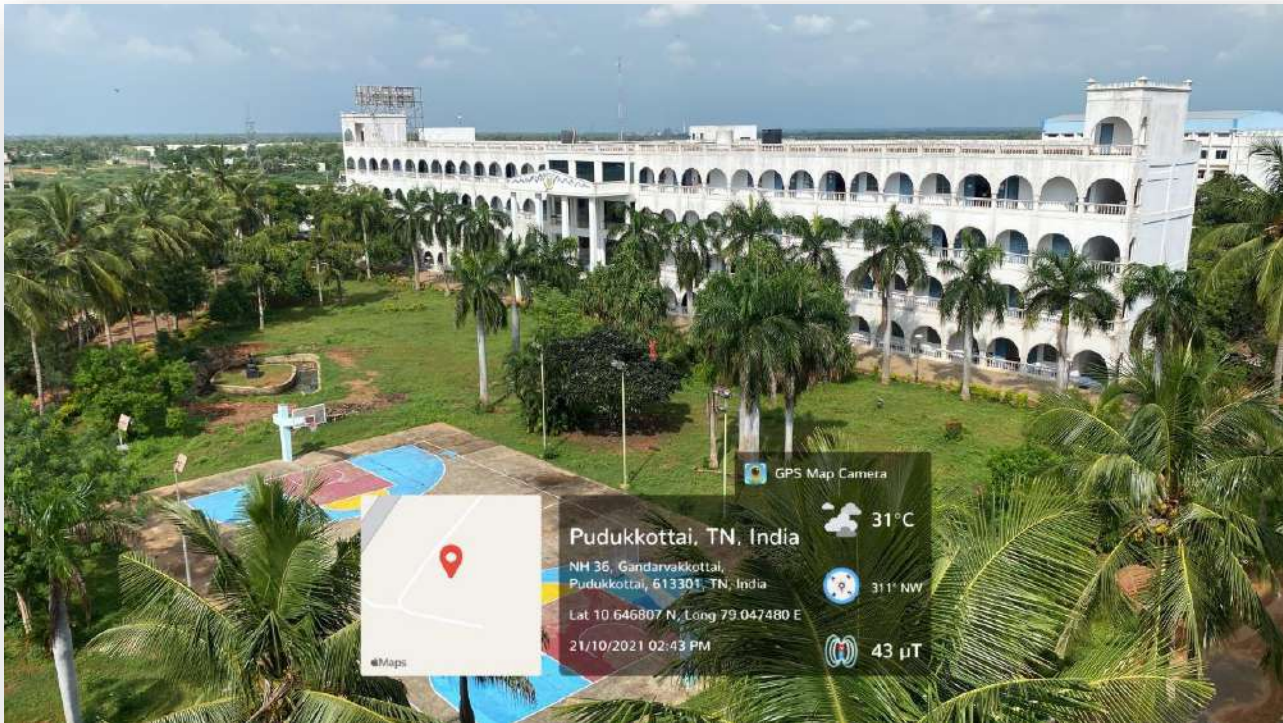


A NAAC Accredited Institution  
**KINGS**  
COLLEGE OF ENGINEERING  
Recognized under 2(f) & 12(B) of UGC  
Approved by AICTE, New Delhi  
Affiliated to Anna University, Chennai



# GREEN AUDIT REPORT

## (2020-2021)



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## 1. Introduction

Earth is the only planet where humans and other living beings can sustain life because of its environment. Revolution in the field of science and technology for making human lives comfortable has reasonably degraded air, water, soil and the environment. Hence, protecting our ecosystem from an environmental disaster is the responsibility of each and every individual. This report stoically stands as a manifestation of how KINGS is imperatively collaborative to coordinate with a major green-hand movement to allay the apprehensions of the public on the environmental degradation by beefing up more awareness activities in the following pattern of programmes.

## 2. Environmental Policy of Kings College of Engineering

To foster eco-friendly management, the following objectives are formulated.

- To train all stakeholders of the institute to contribute for environmental protection.
- To adopt the most energy efficient appliances to reduce energy consumption.
- To judiciously minimize the consumption of water.
- To conserve ground water through rainwater harvesting system for mitigating the effects of drought.

## 3. Kings College of Engineering at Glance

Kings College of Engineering (KCE) was **established in the year 2001** by Raj Educational Trust (RET), Chennai, with the singular aim of providing quality education to the poor and under-privileged students of this region. Situated on the Thanjavur – Pudukkottai Highway spans over 50 acres in a beautiful, serene atmosphere ideally suited for technical education. KCE is approved by All India Council for Technical Education, New Delhi, affiliated to Anna University, Chennai and a **NAAC Accredited** institution. The institute offers five UG and four PG programmes; ECE, EEE and Mechanical Engineering departments are recognized as Research Centres by Anna University, Chennai, for pursuing Ph.D. programmes, and Departments of Civil, CSE, ECE and Mechanical Engineering are **permanently affiliated** to Anna University, Chennai.

Our steps are measured and taken with a goal in our mind to transform this institution a renowned campus where knowledge is a way of life. We, at KINGS, value the Gift of Knowledge but do not put a price tag on it. We remain strong in our policy of “**No Donations and No Capitation**” and have focuses on admitting students of merit. Due consideration is given to the economical state of the family while admitting students from the under-privileged sections of the community. Fully equipped laboratories, computing facilities with more than 600 systems, 100 Mbps internet connectivity and Wi-Fi hooked-up campus assure for enriched learning experiences. Voluminously stocked Central Library with copious

subscription to e-journals of IEEE, Springer, ACM provides competitive learning environment for the students. KCE library is solidly linked with British Council and DELNET for resource sharing. Well qualified faculty members with a structured Teaching-Learning practices equip our students to become a professional to meet industrial standards and requirements. The Training and Placement Cell remains a pivot for the employability skills of the students by regular training on soft and aptitude skills that assist our students not only getting placed in top level corporate companies but also to pursue higher studies at premier Universities and Institutions of India and abroad. A Vibrant Research & Development section of the institute integrates the faculty and the students with R&D activities for innovative engineering projects. The section has received grants from DRDO, MHRD, AICTE, Motorola, TNSCST etc., and accomplished many of the research projects and few are still underway. Professional society activities and Skill enhancement programmes are organized in a structured manner to amplify the overall growth of the students. Various National / State/ Regional Level technical events in association with professional societies and organizations are witnessed periodically. To arouse the societal consciousness among the students, they are encouraged to participate in events organized by NSS, NCC, YRC, RRC and CCC. Physical grooming is made through various sporting facility and activities. Students of KCE bring laurels to the institution through zonal / inter-zonal/ University level/State level and National level sports events. Few records on international participation are also accounted to the credit. KCE shoulders meritorious, economically backward students with various management scholarships.

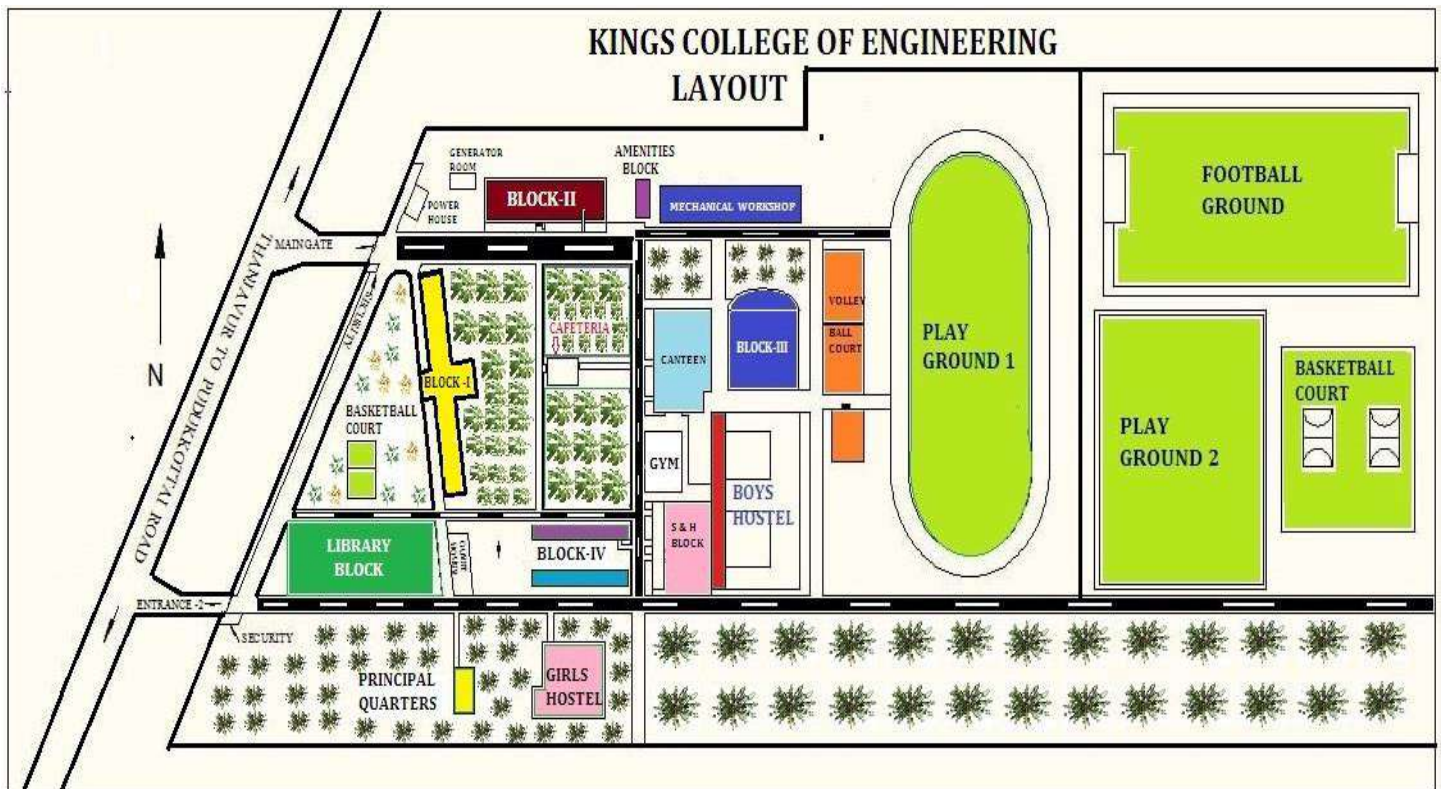
KCE awards like Proficiency award, Best Library user award, Foreign Industrial Visit, and King of KINGS award are in the arsenals to spearhead our students' endeavors reaching the heights of learning. Students securing Anna University ranks are honored with cash prizes during Graduation Day.

#### **4. Satellite view of Kings College of Engineering**



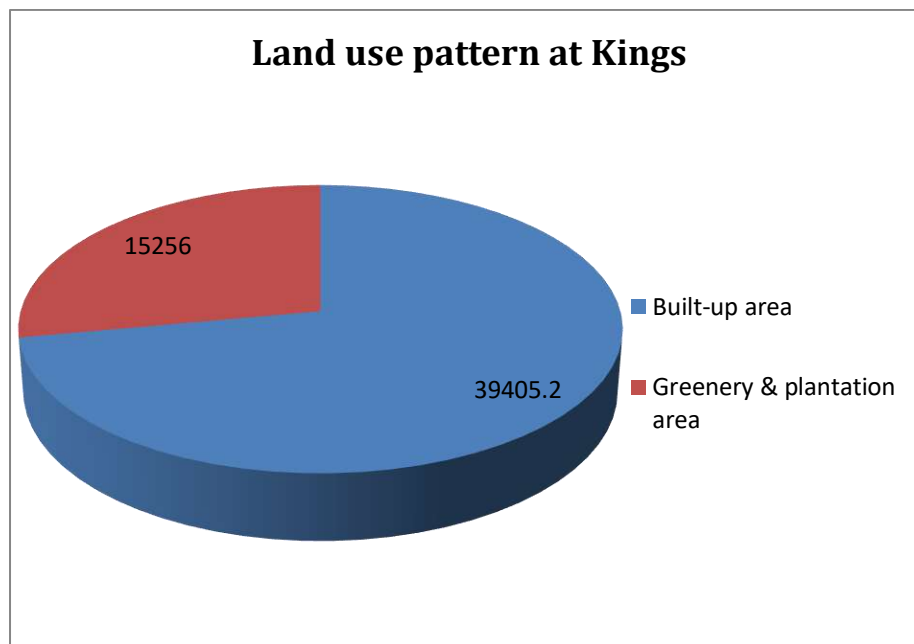


## 5. Layout of College



## 6. Physical Infrastructure of Kings

Facility	Area (in sq.m)
Total Land area (sq.m)	194653 (48.1 Acres)
Total built-up area	39405.2
Total landscape area	177457
Instructional area	15981
Administrative area	4573
Library	3147
Others	2192
<b>Block wise Summary (Built-up area)</b>	
Block I	5940
Block II	5244
Block III	6456
Block IV	1285
<b>Total greenery &amp; plantation area</b>	<b>15256</b>



## **7. Green Auditing**

### **7.1 Objectives**

The vital purpose of the periodical audit is to identify, describe and quantify green plants environment sustainability in compliance with the standard regulations and policies. The objective of the green audit is to promote the environmental management and conserve the lush of green in the college campus. Thus, the green audit has been executed with the following objectives:

- To secure the college environment and cut-down the threats by analyzing the pattern and the extent of resource use on the campus.
- To introduce and aware the teaching and non-teaching staff, and students as to the college environment and its sustainability

### **7.2. Methodology**

In order to perform the green audit, a novel methodology is assumed encapsulating with various exercises such as preparation of campus geographical maps, physical inspection of the campus with help of student volunteers, observation and reviews of the documents, interviewing with various key persons such as estate maintenance officers, garden worker, teaching and non-teaching staffs and students, and data analysis, measurements and recommendations.



### 7.3 Onsite visit and Observations

Our campus has the Green area girding with different variety of plants and sustainability to ensure that the building confirms the shadow of Green, and also helps to affirm the environmental policy and disseminate the plantation knowledge to the student community. This green-roof is sustained through vibrant programmes organized by NSS, NCC, YRC, Eco Club and other Co-academic Associations. These programmes help to uphold eco-friendly environments, majorly contributing to the production of fresh oxygen that benefits our students to rejuvenate from academic attrition. The plantation program roots for various types of indigenous and exotic ornamental plants of timber and fruit values, wild medicinal plant species.

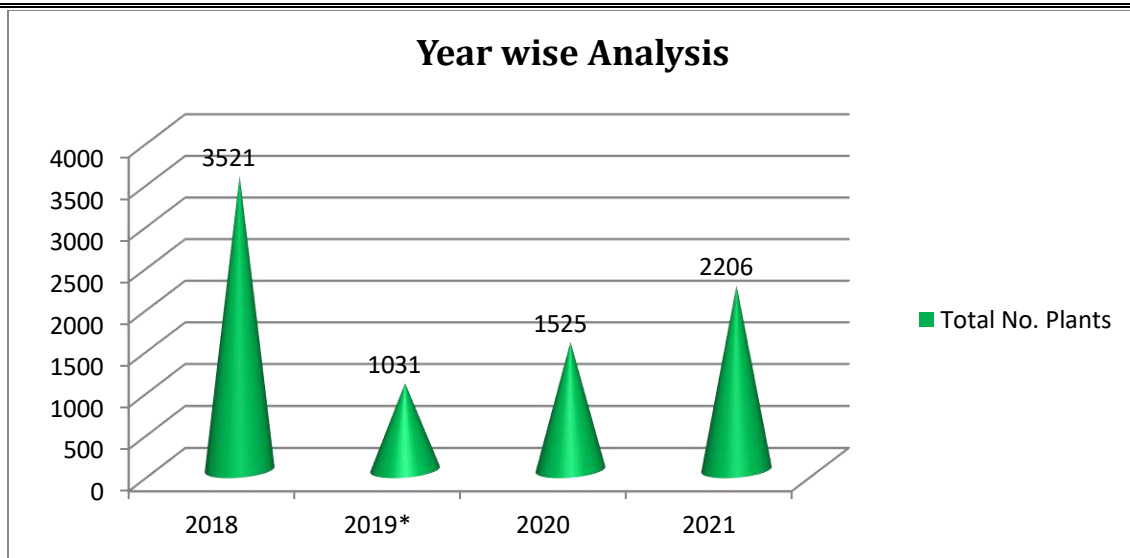
### 7.4 Tree/ Plant Diversity in our campus

A thick belt of large shady trees in the periphery of the college have found to downsize the extraneous noise, dust and storms. Thus, the college has been playing a significant role in maintaining the environment of the entire area. The following are the tree species planted in our college.

S.No.	Common Name of the Plant / Tree	Botanical/Scientific Name	Count
1.	Coconut tree	Cocos nucifera	150
2.	Gooseberry tree	Phyllanthaceae	31
3.	Screw pine tree	Pandanus tectorious	02
4.	Palm Tree	perennial lianas	122
5.	Neem Tree	Azadirachta indica	125
6.	Neem plant	Azadirachta indica	129
7.	Duranta Erecta plant (crotons)	Duranta repens	522
8.	Jungle Geranium (crotons)	Ixora coccinea	291
9.	Woody vine tree	Toxicodendron diversilobum	08

10.	Mimusops elengi tree	Mimusops elengi	120
11.	Senegal date palm tree	Phoenix reclinata	15
12.	Green Plumeria Rubber tree	Plumeria rubra	19
13.	Jack fruit tree	Artocarpus heterophyllus	06
14.	White indigo berry	Randia aculeata	56
15.	Garden Crotons	Codiaeum variegatum	37
16.	Areca palm	Dypsis lutescens	05
17.	Oak plant	Quercus	37
18.	Oak tree	Quercus	08
19.	Ashoka tree	Saraca asoca	01
20.	Mango tree	Mangifera indica	91
21.	Beech tree	Fagus	210
22.	Pine tree	Pinus	30
23.	Indian almond Tree	Terminalia catappa	03
24.	Coulteria platyloba Tree	Coulteria	01
25.	Sagoplam (Crotons)	Cycas revoluta	04
26.	Paperbarks Tree	Melaleuca quinquenervia	04
27.	Monkey puzzle Tree	Araucaria araucana	11
28.	Badam Tree	Prunus dulcis	37
29.	Delonix Regia Tree	Delonix regia	53
30.	Macarthur palm Tree	Ptychosperma macarthurii	35
31.	Fukugi Tree	Garcinia subelliptica	01
32.	Bamboo	Bambusa vulgaris	30
33.	Royal Poinciana Tree	Delonix regia	02
34.	Simavouva glauca Tree	Simarouba glauc	01
35.	Sapota plant	Manilkara zapota	01
36.	Peepal Tree	Ficus religiosa	03
37.	Cactus Plant	Cactaceae	02
38.	Guava Tree	Psidium guajava	03
<b>Total</b>			<b>2206</b>





\*Cyclone Gaja made landfall over Tamil Nadu coast on 16th November 2018 at 1:45am. The devastating eye of the storm had shattered all our efforts in the campus by uprooting of the plants and trees in the campus.

After this calamity, our college resolutely indulged into various green initiatives through various programmes by NSS, NCC, YRC, ECO Club and other Co-academic associations.

## 8. Water Audit

Water audit is a systematic process of objectively obtaining a water balance by measuring flow of water through the distribution system. The conduct of a water audit involves calculating water balance, water use, and identifying ways for saving water.

- Facilities of raw water intake through bore wells.
- Facility for waste water treatment through Sewage Treatment Plant (STP), and utilizing the recycled water for lawns and plantations within the campus.
- Rain water Harvesting (RWH) facility is provided inside the campus.

### 8.1 Water Quality Analysis Report

Water quality testing is important because it identifies contaminants and prevents water-borne diseases. Drinking or using contaminated water can result in severe illness or death. That is why it has become very critical to ensure that drinking water is safe, clean and free from bacteria and disease. The parameters for water quality are determined by the intended use. Work in the area of water quality tends to be focused on water that is treated for human consumption,

Water samples are collected from two point of our campus and analyzed in our college laboratory with regarding to water quality parameters. The observed data were found to be safe and not exceeding the permissible level of WHO standards.

**Sample I : Collected from Block – I Bore Well      Sample II : Collected from Block – IV Bore Well**

S. No.	Parameter	WHO Permissible level (IS 10500:2012)	Observed Value		Methodology
			Sample I	Sample II	
1	Colour	Clear	Clear	Clear	--
2	pH	6.5 – 8.5	7.2	8.0	pH Meter
3	Turbidity	5-10 NTU	5	5	Turbidity Meter
4	Hardness	200-600 ppm	280	300	Volumetric method
5	Alkalinity	200-600 ppm	400	420	Volumetric method
6	Fe	0.30 ppm	0.2	0.3	Spectrometry
7	Na	200 ppm	230	223	Flame Photometer
8	K	12 ppm	11	13	Flame Photometer
9	Mg	30 ppm	45	60	Titrimetric method
10	Ca	75 ppm	80	95	Titrimetric method
11	F-	1 ppm	0.6	0.7	Spectrometry
12	Cl-	250 ppm	180	200	Titrimetric method
13	Nitrate	45 ppm	42	36	Spectrometry
14	Sulphate	200- 400 ppm	150	210	Turbidity meter

**8.2 Rain Water Harvesting in the Campus**

Rainwater harvesting is an important environment friendly approach. It is a Green Practice having double benefit of keeping the groundwater level undisturbed and charging the aquifer. This green practice can be encouraged in the form of Community Development Program. Rainwater and run-off water, stored in a planned way, can save the earth from soil erosion and flood and recharge the aquifers to increase the groundwater level. The extensive and unplanned use of groundwater has not only disturbed the natural water level but also made the groundwater contaminated and unfit for use. Collecting and harvesting rainwater and run-off water would reserve the water for future generation. Rainwater harvesting is eco-friendly and economical. The cost of digging a catchment area can be saved by roof-top collection of rainwater. The catchments and settlement tanks reduce the ground heat and act as a natural cooler. The best part of the practice of rainwater harvesting, is that, if unused, this water can be collected in natural ponds or artificial tanks and decanted to the ground thus charging the a aquifer.

**Objectives**

- To increase recharge of groundwater by capturing and storing rainwater by rainwater harvesting from rooftop run-offs.
- To store the water for gardening & washing purpose.

**Practice**

In the Kings Campus, 23 rainwater harvesting systems have been installed in Block I, Block II, Block III, Block IV, and Boys & Girls Hostel. The roof runoff water is collected through network of

pipelines and stored in the bore wells. The remaining roof runoff water is allowed to infiltrate in the ground for recharge.



***Rainwater Harvesting system at Block IV***



***Rainwater Harvesting system at Library***

### **8.3 Reverse Osmosis Plant (RO)**

Reverse osmosis (RO) is a membrane technical filtration method that removes many types of large molecules and ions from solutions by applying pressure to the solution when it is on one side of a selective membrane. The result is that the solute is retained on the pressurized side of the membrane and the pure solvent is allowed to pass to the other side.

College has its own mineral water (RO) plant in the college campus. Entire college is supplied with the mineral water from the plant. It provides healthy and clean drinking water to staff and students. This water is provided to the block I to IV, laboratory, boys & girls hostel and canteen.



***Reverse Osmosis Plant (RO)***

## 9. Noise Level in campus

Noise pollution is caused by natural or anthropogenic sources. It is characterized by intensity (dB) and frequency (Hz). In our campus, we observed acceptable noise level by following methods. The steps are taken to reduce the noise pollution with the following ideologies,

- As the majority of the staff and students come from local city, they are advised to utilize the college bus facilities.
- Students are advised not to use vehicles unnecessarily within the campus to minimize the noise level and air pollution.

Though KINGS is situated on the sidelines of Thanjavur – Pudukkottai highways, no noise pollution is felt to harm the learning environment, due to the fact that there is stocky foliage inside the campus to thwart noise transmission.

## 10. Air Qualities in Campus

Air quality is very important to the health of the students and staff of any academic institutes. In our campus, total 2206 plants different varieties are planted. In the campus, there is lot of open spaces and all buildings are laid out with good airy spheres. College has formulated a green zone to reduce carbon emission and its spread to stick the fact the **CLEAN AIR - CLEAR MIND**. Air quality obtained in our college campus is tabulated below:

S. No	Air Quality Parameter	WHO Permissible Exposure Limit (24hrs Mean)	Observed Value
1	Fine Particulate matter (PM2.5)	15 $\mu\text{g}/\text{m}^3$	19 $\mu\text{g}/\text{m}^3$
2	Coarse particulate matter (PM10)	45 $\mu\text{g}/\text{m}^3$	31 $\mu\text{g}/\text{m}^3$
3	O <sub>3</sub>	51.32 ppb	10 ppb
4	NO <sub>2</sub>	13.39 ppb	7 ppb
5	SO <sub>2</sub>	15.38 ppb	1 ppb
6	CO	50000 ppb	1000 ppb
7	Air Quality Index	50	40 (Good)





## 11. Waste management

The college adopts a policy of segregating waste and carrying out its disposal by an efficient waste management system. The waste, like food waste, plant debris, paper waste, e-waste and plastic waste, is possibly segregated by trash bins, placed in and around the entire campus. The trash bins are differently coloured to represent a particular type of waste. The colours used are blue, green and red, and they represent paper waste, plant debris and plastic waste respectively. The college consists of a considerably large compost pit and the segregated wet wastes are dumped in that pit. Manure obtained from this process is used for the flora of the college.

S. No.	Type of waste	Method of disposal
1	Food waste	Being fed to pigs and dogs
2	Plant debris	Dumped into Compost pit
3	Paper waste	Driven to Recycling unit
4	e-waste	Being sold as scrap waste
5	Plastic waste	Plastic usage is prohibited

## 12. Energy Audit

An energy audit is an inspection survey and an analysis of energy flows for energy conservation in a building. The energy audit is the first step in identifying opportunities to reduce energy expense. The institution has carried out a periodic annual energy audit and implemented the recommendation in the past. The energy audit has been conducted by our EEE department faculty members and students.

### Scope of Energy Audit

#### The following are the scope of energy audit

- Review of electricity bills for the last three years
- Study of various capacity of motors, machines, lights, fans, AC, Computers, etc and utilization, loading, efficiency and thereby suggesting measures for saving the energy.
- Study of electrical load in the all the blocks.

### 12.1 Methodology

The approach shall be to acquire and analyze past data and finding the energy consumption pattern of these faculties. Energy audit of our institution has been conducted by analysis power consumption patterns over the year, total connected load and utilization of power.

## 12.2 Block wise total connected load

S. No.	Name of the Block	Electrical Load in (Kilowatt)
1	Block I ( Main Block)	182.36
2	Block II ( IT Block)	18.72
3	Block III	88.23
4	Block IV ( 1 <sup>st</sup> Year Block)	18.84
5	Library Block	183.36
6	Workshops	29.30
<b>Total Electrical Load in (Kilowatt)</b>		<b>520.81</b>

### Details of Connected load in all the blocks

BLOCK I				
Room / lab Detail	Name of the machine/ Equipment/item	Maximum power rating	No. of quantities	Total Electrical Load in (watt)
Electrical machines	Machines and equipments	3.5 KW	08	28000
		3.7KW	02	7400
		5.2KW	03	15600
		4.5KW	01	4500
		1.5KW	01	1500
		6.6 KW	01	6600
		7.5KW	02	15000
Electrical machines lab	Fan	60W	21	1200
	Double fitting light	80W	19	1500
	Tube light	40W	02	80
Admission office	Fan	60W	04	240
	Tube light	40W	06	240
	Wall fan	40W	02	80
	System	60W	05	300
	Scanner	30W	01	30
	Printer	30W	01	30
	Xerox machine	30W	01	30
Principal room	Fan	60W	02	120
	Tube light	40W	03	120
	<b>LED light</b>	40W	04	160
	Wall fan	40W	01	40
	AC	1000W	01	1000
	System	60W	02	120
Varanda	Tube light	40W	04	160
Central lobby	Camera	10W	01	10
	Biometric sensor	30W	01	30
	Electronic name plate	30W	01	30
Rest room	Tube light	40W	04	160
	Exhaust fan	60W	02	120

Secretary room	<b>LED light</b>	40W	06	240
	AC	1000W	01	1000
	System	60W	01	60
	Printer	1200W	01	30
	Standing fan	60W	01	60
	Tube light	40W	02	80
	Shelling fan	60W	02	120
Admin office	Fan	60W	06	360
	Tube light	40W	04	160
	Double tube	80W	02	160
	System	60W	06	360
	Printer	1200W	02	60
	AC	1000W	02	1000
Control system lab (1 <sup>st</sup> floor)	Fan	60W	08	480
	Double light	80W	06	480
	System	60W	01	60
Power electronics lab	Fan	60W	13	780
	Light	40W	03	120
	Double tube light	80W	08	640
	System	60W	05	300
	Printer	1200W	01	30
Simulation lab	Incoming voltage	440V	0	0
	Tube light	40W	10	400
	System	60W	06	360
ECE digital lab	Fan	60W	01	60
	Double tube light	80W	10	800
1 <sup>st</sup> floor Varanda	Tube light	40W	05	200
DSP lab	Incoming no lode	2K	01	2000
	Fan	60W	06	320
	Wall fan	40W	05	200
	Tube light	40W	06	200
	System	60W	28	1000
	Standing fan	60W	01	60
Optical lab	Fan	60W	06	360
	Wall fan	40W	05	200
	<b>LED tube light</b>	40W	06	240
	System	60W	02	120
	Printer	1200W	01	30
LIC lab	Fan	60W	06	360
	Tube light	40W	06	240
Restroom	Light	40W	04	160
	Exhaust fan	60W	02	120
LIC lab Varanda	Light	40W	02	80
Main block 2 <sup>nd</sup> floor	Main switch three phase	4KW	01	4000

Pallava hall	AC	1000W	05	5000
	Wall fan	40W	09	360
	Halogen light	50W	04	200
	Passo light	30W	03	90
	Double tube	80W	12	960
	Projector	150W	01	150
	System	60W	01	60
	Amplifier	350W	01	350
	UPS	670	01	670
Class rooms	Fan	60W	07	420
	Double Tube light	80W	12	960
	Tube light	40W	02	80
Block I 3 <sup>rd</sup> floor	Fan	60W	29	1700
	Tube light	40W	22	880
	System	60W	01	60
	Printer	30W	01	30
	Solar panel	1000W	04	4000
	Camera	10W	01	10
Block I building opposite	<b>LED Street light</b>	55W	10	550
Block II building opposite	<b>LED Street light</b>	250W	06	1250
Amenities block	Fan	60W	04	240
	Tube light	40W	07	280
Mechanical work shop	Main switch, three phase	4KW	01	4000
Mechanical lab	Ceiling Fan	60W	04	240
	Tube light	40W	03	120
	Exhaust fan	60W	03	180
Manufacturing technology lab	Main panel	415V/630A	01	42
	Lathe machine	1.5KW	11	16500
	Milling machine	1.5KW	01	1500
	Gear hobbling machine	1.5KW	01	1500
	Surface grinding machine	0.75KW	01	750
	Shaping machine	1.5KW	01	1500
	Slotting machine	0.75KW	01	750
	Radial drilling machine	0.75KW	02	1500
	Pillar drilling machine	1.5KW	01	1500
	Grinding machine	0.37KW	02	740
	Eccentric machine	1.5KW	01	1500
Band saw machine	0.375KW	01	375	
Fluid mechanical lab	Pelton wheel turbine	11KW	01	11000
	Francis turbine	11KW	01	11000
	Centrifugal pump	1.50KW	01	1500
	Reciprocating pump	0.75KW	01	750
	Pipe friction test	0.37KW	01	370



	Drill venturi rotameter	0.37KW	01	370
	Gear pump test	1.10KW	01	1010
Strength of material lab	Universal testing machine	2KW	01	2000
	Torsion testing machine	0.37KW	01	370
	Tensile testing machine	0.5KW	01	500
<b>Total Electrical Load In Block II (W)</b>				<b>182357</b>
<b>Total Electrical Load In Block II (KW)</b>				<b>182.36</b>

<b>BLOCK II</b>				
<b>Room / lab Detail</b>	<b>Name of the machine/ Equipment/item</b>	<b>Maximum power rating</b>	<b>No. of quantities</b>	<b>Total Electrical Load in (watt)</b>
1 <sup>ST</sup> Floor –CSE Lab1	Fan	60W	12	720
	Tube light	40W	16	640
	System	60W	86	5100
	Camera	10W	02	20
CSE Lab 2	Fan	60W	08	480
	tube light	40W	06	240
	System	60W	02	120
	Printer	1200W	01	30
	Camera	10W	02	20
CSE Lab 3 (Civil Lab)	Fan	60W	08	480
	Tube light	40W	06	240
	System	60W	34	2000
	Camera	10W	01	10
1 <sup>st</sup> Floor (Server room)	Common server	60W	02	120
	Telnet server	60w	01	60
	Kings server	60w	01	60
CSE Net Lab	Fan	60W	10	600
	Tube light	40W	08	320
	Camera	10W	01	10
Staff Cabin	Fan	60W	02	120
	Tube light	40W	02	80
IT Block 2 <sup>nd</sup> Floor CSE	Fan	60W	43	2500
	Tube light	40W	51	2000
IT Block 3 <sup>rd</sup> Floor Civil	Fan	60W	40	240
	Tube light	40W	43	1700
	System	60W	07	420
	Printer	30W	03	90
IT Block Head Room	Fan	60W	03	180
	Tube light	40W	03	120
<b>Total Electrical Load In Block II (W)</b>				<b>18720</b>
<b>Total Electrical Load In Block II (KW)</b>				<b>18.72</b>

<b>BLOCK III</b>				
<b>ROOM / LAB DETAIL</b>	<b>NAME OF THE MACHINE/ EQUIPMENT/ITEM</b>	<b>MAXIMUM POWER RATING</b>	<b>NO.OF QUANTITIES</b>	<b>TOTAL ELECTRICAL LOAD IN (Watt)</b>
Ground Floor (Girls)	Fan	60W	18	100
	<b>LED tube light</b>	40W	20	80
Ground floor (boys)	Fan	60W	17	1000
	Tube light	40W	07	280
	<b>LED bulb</b>	40W	02	80
	<b>LED tube light</b>	40W	14	560
Kitchen	Fan	60W	03	180
	<b>LED light</b>	40W	14	560
	Grinder	3KW	01	3000
	Flare mixer	3KW	01	3000
	Mixer	500W	01	500
CAD Lab	Fan	60W	39	2300
	Light	40W	38	1500
	System	60W	05	300
	AC	1000W	02	20
Chera hall	AC	35KW	02	70000
	Projector	150W	01	150
	Amplifier	350W	01	350
	LED Light	24W	02	48
	Tube light	40W	07	280
	Wall fan	60W	10	600
	Pedestal fan	80W	01	80
	System	60	01	60
Indoor Stadium	Focus light	200W	20	2000
	Fan	60W	14	840
	Light	40W	09	360
<b>Total Electrical Load in Block III (W)</b>				88228
<b>Total Electrical Load In Block III (KW)</b>				88.23

<b>BLOCK IV</b>				
<b>Room / lab Detail</b>	<b>Name of the machine/ Equipment/item</b>	<b>Maximum power rating</b>	<b>No. of quantities</b>	<b>Total Electrical Load in (watt)</b>
1 <sup>st</sup> Year Block	Fan	60W	36	200
	Double	80W	24	1900
	<b>LED light</b>	40W	06	240
	Wall fan	60W	05	350
1 <sup>st</sup> Year Varanda	Tube Light	40W	11	440
Physics Lab (Dark Room)	Fan	60W	04	240
	Double tube light	80W	02	160

Physics Lab	Fan	60W	16	960
	Double Tube Light	80W	12	960
	System	60W	02	120
	Printer	30W	01	30
Chemistry Lab	Fan	60W	12	720
	Exhaust fan	60W	02	120
	Standing fan	60W	01	60
	Double tube light	80W	08	640
	System	60W	02	120
	Printer	30W	01	30
Mathematics Department	Fan	60W	08	480
	Double tube light	80W	08	640
	System	60W	02	120
	Printer	30W	01	30
Gym	Tube light	40W	06	240
Boys hostel	Focus light	200W	01	200
Ground floor	Fan	60W	36	2000
	Tube light	40W	36	1000
	System	60W	02	120
	LED TV	60W	01	60
Varanda	Tube light	40W	08	480
Bath room	<b>LED light</b>	40W	07	280
	Tube light	40W	01	40
1 <sup>st</sup> floor	Fan	60W	38	2100
	Tube light	40W	19	760
Bath room	Tube light	40W	02	80
	<b>LED light</b>	40W	04	160
Varanda	Tube light	40W	09	360
	Focus light	200W	01	200
2 <sup>nd</sup> floor	Fan	60W	26	1000
	Tube light	40W	14	560
Varanda	Tube light	40W	01	40
	<b>LED light</b>	40W	01	40
Bath room	<b>LED light</b>	40W	02	80
	Tube light	40W	02	80
Hostel	5HP motor	3KW	01	300
Plumber room	Fan	60W	01	60
	Tube light	40W	01	40
<b>Total Electrical Load In Block IV (W)</b>				<b>18840</b>
<b>Total Electrical Load In Block IV (KW)</b>				<b>18.84</b>

<b>Library Block</b>				
<b>Room / lab Detail</b>	<b>Name of the machine/ Equipment/item</b>	<b>Maximum power rating</b>	<b>No. of quantities</b>	<b>Total Electrical Load in (watt)</b>
Library block	In coming voltage /current	440V/5A	01	4000
Ground floor	Fan	60W	43	2500
	Tube light	40W	49	1900
	<b>LED light</b>	25W	01	25
	Exhaust fan	60W	01	60
	Bulb	12W	01	12
	System	60W	01	60
Store room	Light	40W	06	240
	Fan	60W	02	120
	System	60W	01	60
1 <sup>st</sup> floor	Fan	60W	48	2800
	Light	40W	46	1800
	System	60W	12	720
	Xerox machine	50W	02	100W
2 <sup>nd</sup> floor	Fan	60W	42	2500
	Light	40W	40	1600
	AC	35KW	5	175000
	System	60W	1	60
	Exhaust fan	60W	1	60
<b>Street lights (LED)</b>	Canteen	20W	2	40
	First year block	20W	1	20
	Physics lab	20W	1	20
	Ground side	20W	3	60
	Girls hostel	20W	3	60
	Library back	55W	5	275
	Gate compound	20W	3	60
	Outside	20W	2	40
Security office	Light	40W	1	40
	Fan	60W	2	120
	High pressure mercury vapour lamp	400W	1	400
Basketball court	Light	250W	12	3000
<b>Total Electrical Load In Library Block (W)</b>				<b>183355</b>
<b>Total Electrical Load In Library Block (KW)</b>				<b>183.36</b>

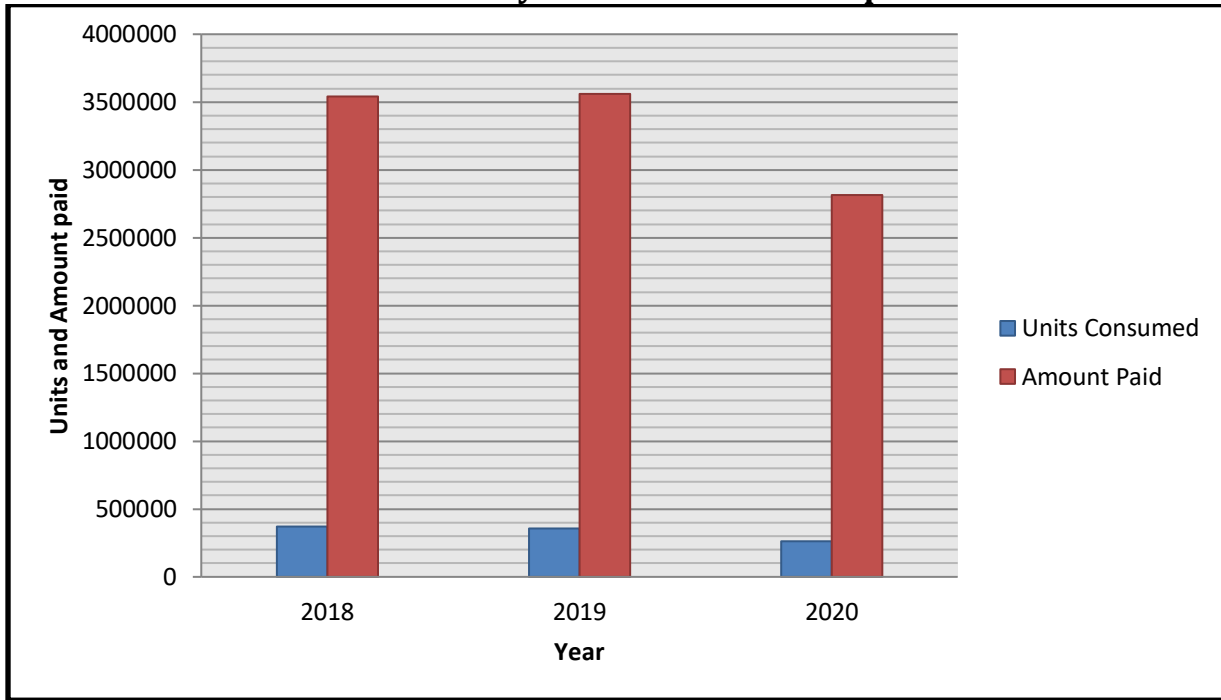


<b>WORKSHOPS</b>				
<b>Room / lab Detail</b>	<b>Name of the machine/ Equipment/item</b>	<b>Maximum power rating</b>	<b>No. of quantities</b>	<b>Total Electrical Load in (watt)</b>
Thermal Engineering Lab	Centrifugal mono block pump set	3.7KW	1	3700
	Single phase motor	0.37	1	370
	Alternator(single cylinder petrol engine test rig)	2KW	1	200
	Lagged pipe apparatus, pin-fin apparatus emissivity apparatus: temperature indicator	1500W	1	2000
	Air condition rig	2000	1	6000
	Heat pump	15KW	1	1000
	Steam turbine test rig 1	0.37KW	2	740
	Steam turbine test rig 2	0.55KW	2	1100
	Alternator separating & throttling Calorimeter	2KW	1	2000
	Air compressor test rig	3.70KW	1	3700
	Forced convection apparatus	10W	1	10
	Natural convection apparatus	36W	1	36
	Tube light	40W	10	400
	Fan	60W	10	600
Dynamic Laboratory	Total load	2KW	1	2000
	Motorized gyroscope	115W	1	115
	Cam analysis apparatus	115W	1	115
	Vibration table	115W	1	115
	Static and dynamic balancing apparatus	115W	1	115
	Fan	60W	6	360
	Tube light	40W	4	160
Soil Mechanics Lab	Abrasion test machine	2KW	1	2000
	Compaction Factor	345W	1	345
	Fan	60W	12	720
	Light	40W	5	200
CAM Lab	Light	40W	4	160
	Fan	60W	4	240
Hydraulic lab	Light	40W	4	160
	Fan	60W	4	240
Survey lab	Light	40W	4	160
	Fan	60W	4	240
<b>Total Electrical Load In Workshops (W)</b>				29301
<b>Total Electrical Load In Workshops (KW)</b>				29.30

### 12.3 Review of electricity bills for the last three years

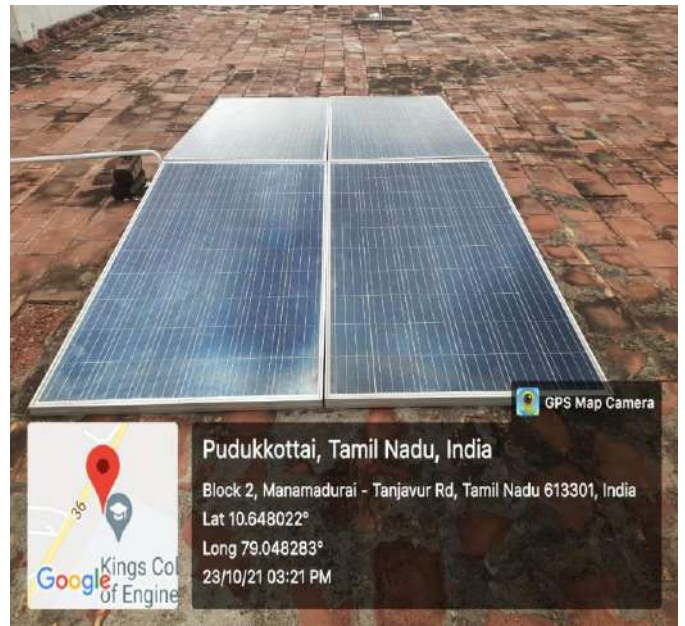
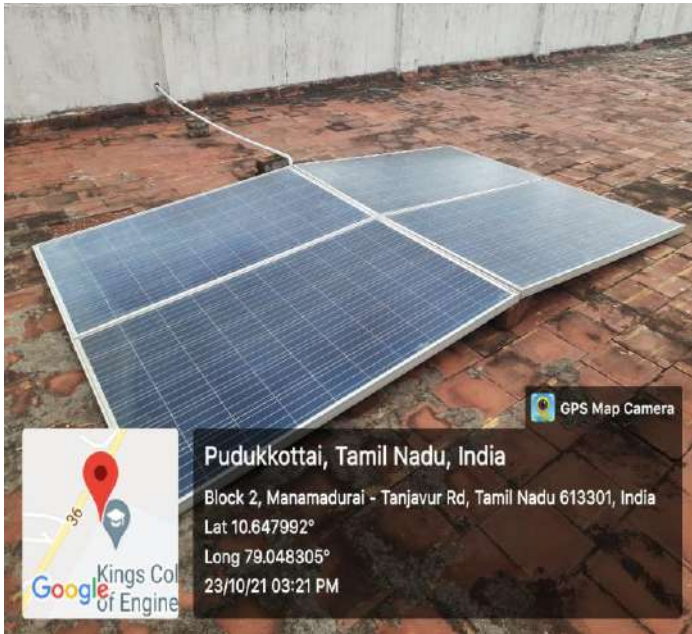
S. No.	Year	Month	Consumed Units	Amount paid
1	2018	January	26157	258364
		February	31166	290992
		March	31194	297038
		April	33450	311633
		May	30849	293735
		June	19827	228553
		July	34398	308879
		August	38290	350990
		September	38008	345030
		October	35245	319211
		November	26253	296167
		December	24864	241349
<b>Total</b>			<b>369701</b>	<b>3541941</b>
	2019	January	22293	249757
		February	32832	313411
		March	37250	303350
		April	28933	333479
		May	30176	305364
		June	25504	224572
		July	26733	324272
		August	33722	325977
		September	30432	330257
		October	30595	295736
		November	35614	323320
		December	21344	231621
<b>Total</b>			<b>355428</b>	<b>3561116</b>
3	2020	January	27894	276677
		February	33220	311752
		March	26090	269486
		April	13460	185311
		May	18954	220607
		June	23606	213771
		July	15317	225685
		August	20428	221451
		September	20039	241462
		October	23056	237062
		November	18138	199290
		December	20656	211463
<b>Total</b>			<b>260858</b>	<b>2814017</b>

### Year wise analysis of Power Consumption



### 12.4 Roof Top Solar Photovoltaic System

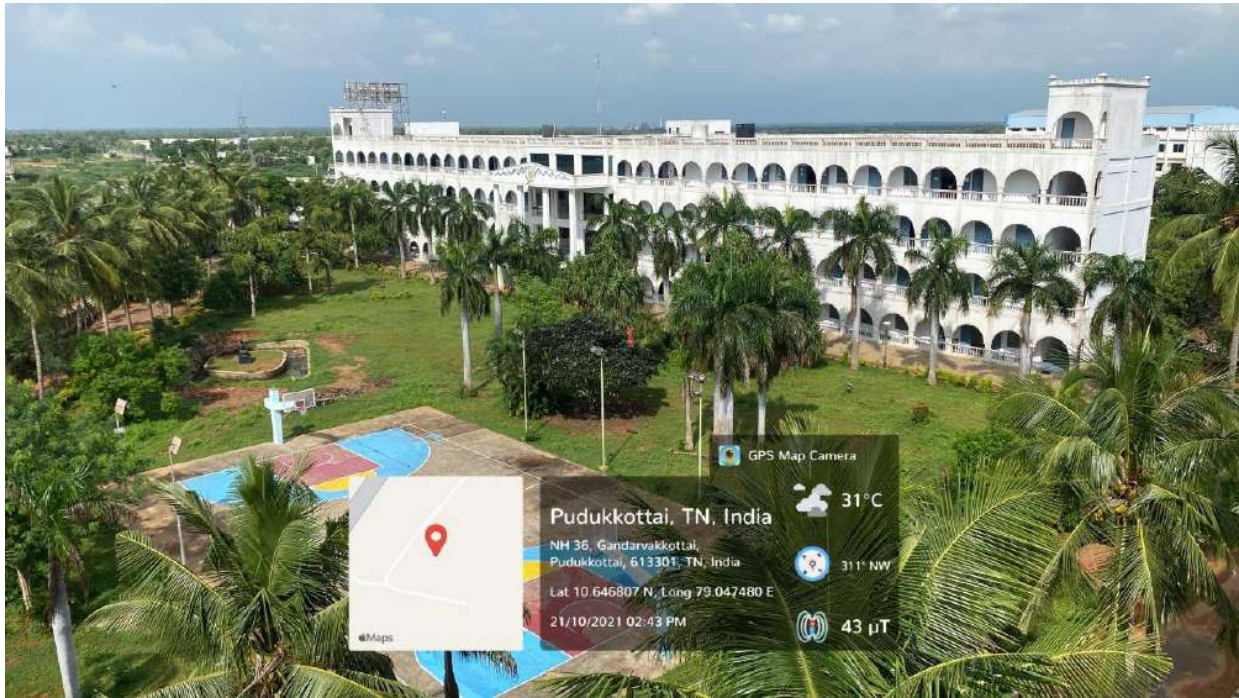
Solar Photovoltaic System panels 1.04KW grid connected power is installed in the campus. The total energy supplied to the grid after the captive consumption is 600W/hrs.



The tapping of solar energy for those surviving systems is proposed to be implemented in the campus completely to co-operate eco-friendly ideologies that lead to a cost effective sustenance.



### 13. Glimpses of campus



***Block I –Main Campus***

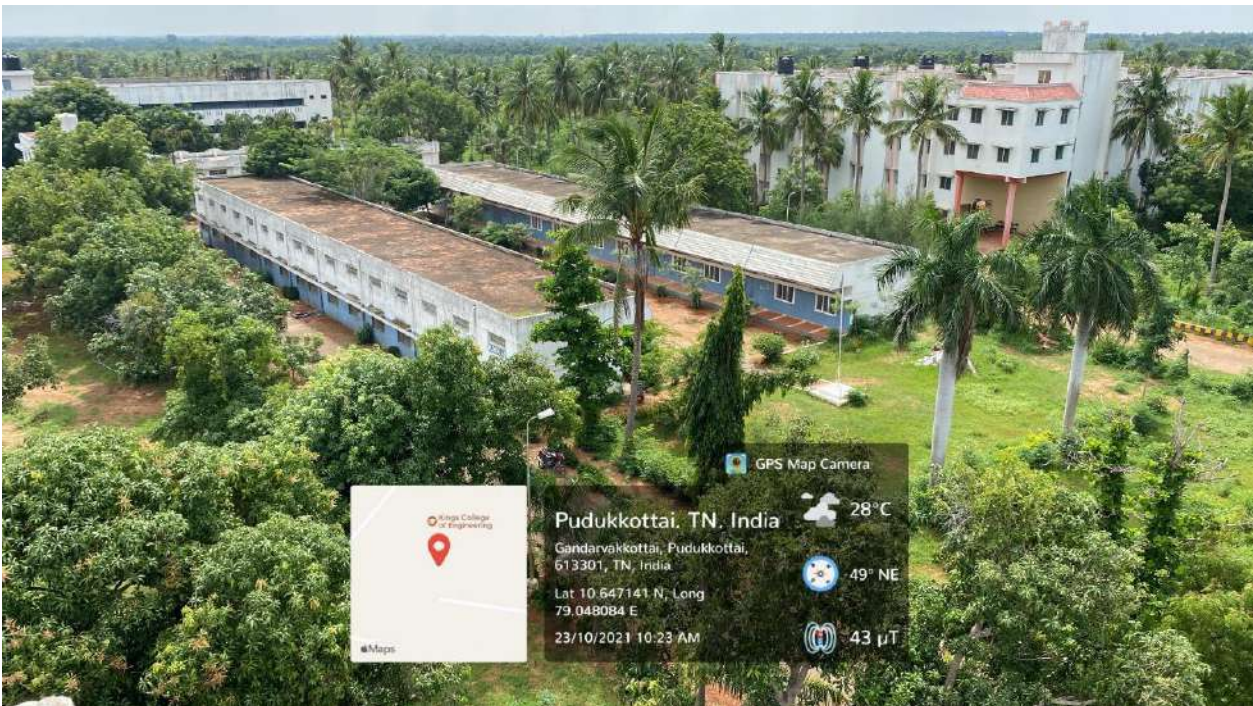


***Block II (IT Block)***



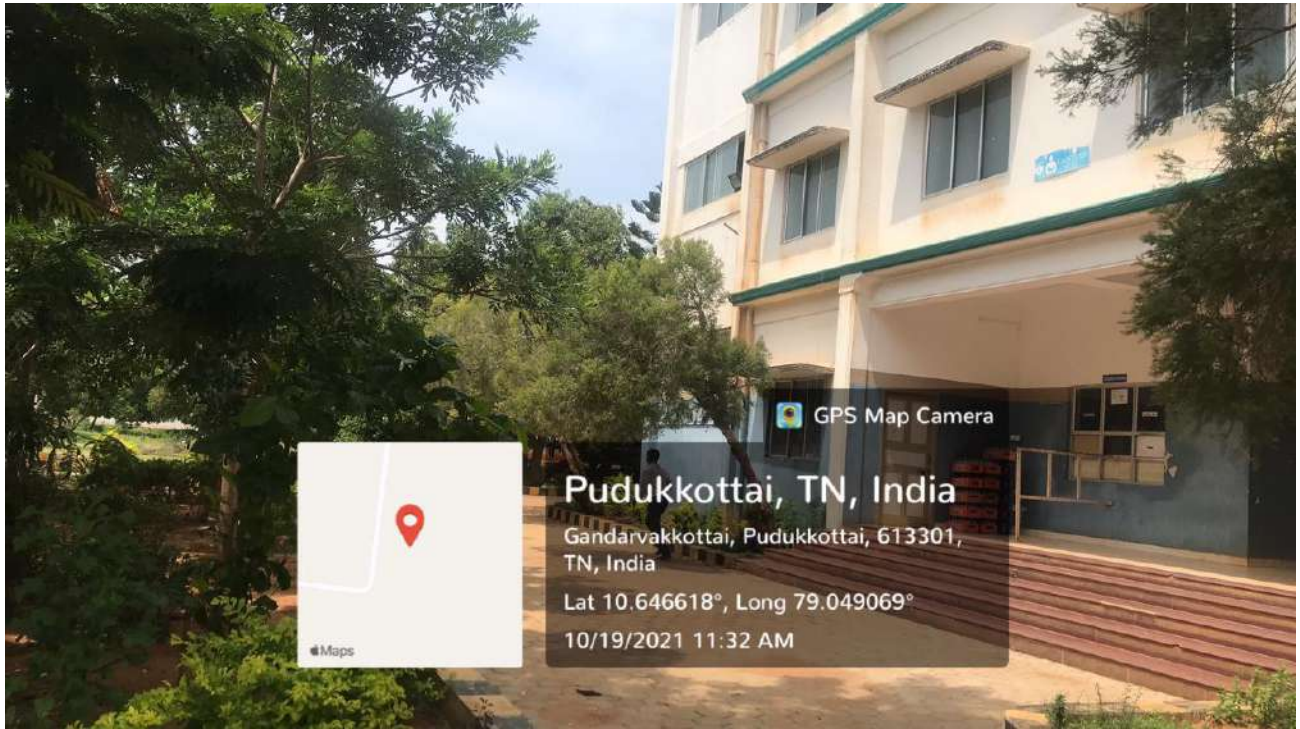


***Block III ( Mechanical Block)***



***Block IV (I Year Block)***





***Kings Canteen***



***All Comprehensive Boys Hostel***



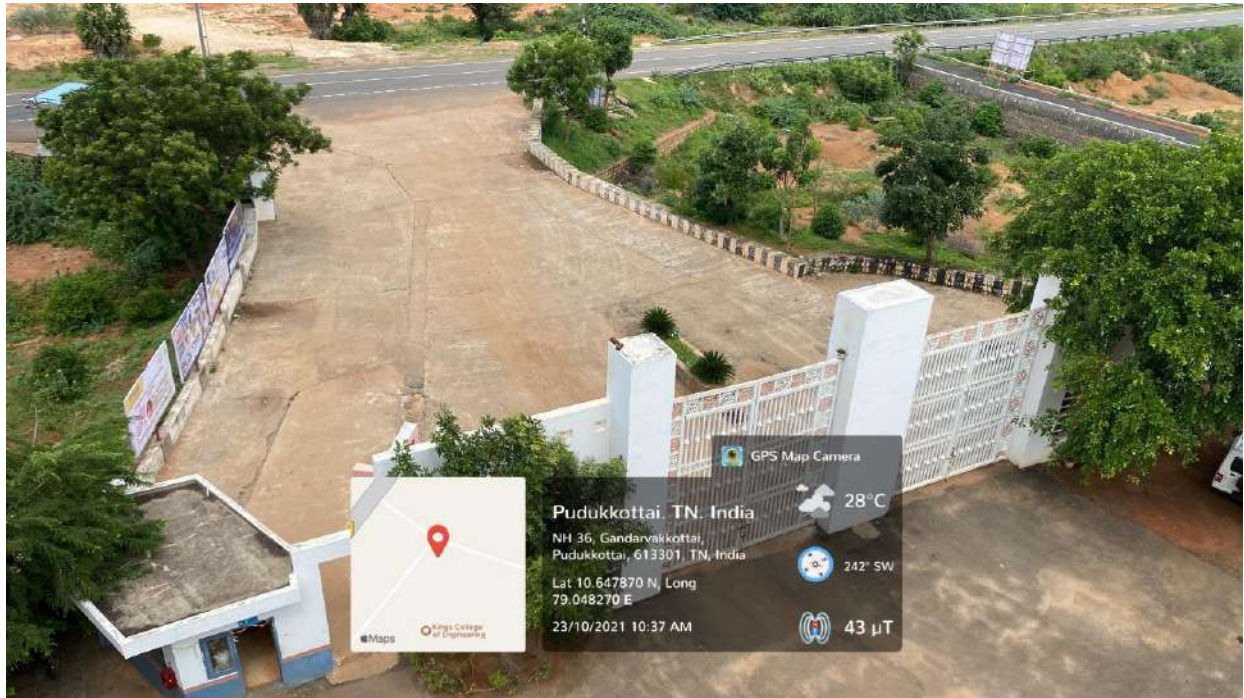


***A Vibrant Main Block***



***A Colossal Library Building***





*Main Gate-a threshold to engineering innovation*

## 14. Green Initiatives

### 14.1 Initiatives through NSS



*Tree Plantation was organized on NSS Day*





***Sapling Plantation by NSS Units***



***Kings Clean Campaign by NSS Units***



***Plastic Ban Awareness Programme***





**Living up to the motto of "One student - One Tree"**



**A NAAC Accredited and ISO Certified Institution**



**KINGS**  
COLLEGE OF ENGINEERING


Recognized by 2(F) & 12(B) of UGC  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai  
Punalkulam, Gandarvakottai, Pudukkottai - 613303



PROGRESS THROUGH KNOWLEDGE

**Webinar on "Water Management"**  
Organized by  
**National Service Scheme**

**World WATER Day**



**SAVE WATER**



**Resource Person:**  
**Mr. R. Sundharam**  
AP / Civil  
KCE

**Mr. P. Raajeshwaran**  
**Mr. S. Ambalatharasu**  
NSS Programme Officers

**Dr. J. Arputha Vijaya Selvi**  
PRINCIPAL

**14.2 Initiatives through NCC**







***Tree Plantation by NCC Unit***

### **14.3 Initiatives through Eco-Club**

The main aim of the establishment of ECO club is to make students think productively to conserve the natural resources to their maximum extent so as to pass on this wonderful planet to NextGen in the same way it was given to us by our ancestors.

**Vision :** To make the students a responsible care taker of the place where we live in by educating the need for conserving the natural resources.

#### **Objectives**

- To promote activities which make students understand the biodiversity conservation for the healthy well being.
- To avoid plastics and other things that creates pollution and spoils the planet.
- To maintain cleanliness in and around the living place.
- To reduce the electric power consumption with the motto of “**A penny saved is a penny gained**”.

#### **Programmes Organized**



***Quiz programme conducted on “World Nature Conservation Day”***



***Awareness talk on “Electricity Conservation”***



**Speech Contest on “Approaches to Reduce Pollution”**



**Model Expo on “Useful Products from Waste Materials”**

#### **14.4 Initiatives through Dr. APJ Abdul Kalam Memorial Foundation**

Dr. APJ Abdul Kalam Memorial Foundation was formed in the year 2015 at Kings College of Engineering by Department of Mechanical Engineering students. The main objective is to visualize green KINGS through environment protection and plantation of more trees in and around the campus. The target of the foundation is to plant trees equal to students’ strength and make pollution free KINGS. Every year, on behalf of Dr. APJ Abdul Kalam Memorial Foundation, Mechanical Engineering students commemorate the birth anniversary of Dr. APJ Abdul Kalam as “Plantation day” to spread awareness among the students and public regarding the importance of ecology and the natural environment. In addition to tree plantation, the foundation also extends support during various natural calamities and medical emergencies.

### Activities of Dr. APJ Abdul Kalam Memorial Foundation

Sl.No.	Date	Details of Events
<b>2015-16</b>		
1	04.08.2015	Tree plantation at KCE
2	08.08.2015	Blood donation camp at KCE
3	22.08.2015	Medical camp & Food providing for Deaf & Dumb
<b>2016-17</b>		
1	27.07.2016	Blood donation camp at KCE
2	07.08.2016	Tree plantation & Food providing for Deaf & Dumb school in Thanjavur
3	21.08.2016	Medical camp & Food providing
<b>2017-18</b>		
1	20.07.2017	Tree Plantation & Food providing
2	12.08.2017	Blood camp at KCE
<b>2018-19</b>		
1	18.08.2018	Handed over the relief materials to Collectorate, Thanjavur (Kerala Flood relief)
2	09.12.2018	Providing relief materials for KAJAH cyclone in Gandarvakkottai Tk.
<b>2019-20</b>		
1	15.10.2019	Tree Plantation at KCE
<b>2020-21</b>		
1	10.06.2020	Webinar on Recent Trends in Automotives
2	15.10.2020	Dr.A.P.J. Abdul Kalam Birthday Celebration conducted through Online Mode.





***Tree Plantation by Dr. APJ Abdul Kalam Memorial Foundation***







**Plantation day was observed on Dr. APJ Abdul Kalam's Birthday Anniversary**

### **14.5 Initiatives through Students Project Works**

Our college always motivates the students to do projects on green environment and also disseminate awareness among the students about environmental protection through the projects.

The students of CIVIL department had successfully accomplished a concept project on "Experimental Investigation on Permeable Pavement Block by Using Demolition Waste (CA)"

#### **Abstract of the Project**

A heap of demolished waste is generated every year in India. Since even the small amount of wastes is recycled, disposing of waste becomes very serious problem and it requires more space. The

objective of this project is to find a good permeability and strength for the permeable pavement block. The pavement blocks absorb the water Coarse aggregate partially replaced by demolition waste in the proportion of 20 30 40 percentage of demolition waste Cubes casted with concrete mixes (M 35 and subjected to curing for 7 days, 14 days, 28 days and their strength tested. It is designed for light traffic.

### **Test for Demolition Waste**



***Water absorption test***



***Crushing value test***



***Fineness test***



***Consistency test***





**Abrasion test**

## **15. Conclusion**

Green Audit is the most efficient way to identify the strength and weakness of environmental sustainable practices and to find a way to solve problem. Green Audit is one kind of professional approach towards a responsible way in utilizing economic, financial, social and environmental resources. Green audits can “add value” to the management approaches being taken by the college and is a way of identifying, evaluating and managing environmental risks (known and unknown). There is scope for further improvement, particularly in relation to waste, energy and water management. The college in recent years considers the environmental impacts of most of its actions and makes a concerted effort to act in an environmentally responsible manner. Even though the college does perform fairly well, the recommendations in this report highlight many ways in which the college can work to improve its actions and become a more sustainable institution.

*J. Anant Kumar*  
11/11/2021

**Principal**  
**Kings College of Engineering**