




TAKSHASHILA EDUCATIONAL SOCIETY'S  
SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES  
LMD Colony, Thimmapur Village, Dist – Karimnagar,  
Telangana – 505527, India.

(Approved by AICTE, Affiliated to JNTUH)

## Green Audit Report

2022-23

  
**Principal**  
Sree Chaitanya Institute of Technological Sciences  
L.M.D. Colony, KARIMNAGAR (T.S.)

# Green Audit

- Green Campus Management and Carbon Foot print of the institute for Environmental Consciousness and Sustainability.
- Green Practices
- Students, staff using a) Bicycles b) Public Transport  
c) Pedestrian friendly roads
- Plastic-free campus
- Paperless office
- Green landscaping with trees and plants

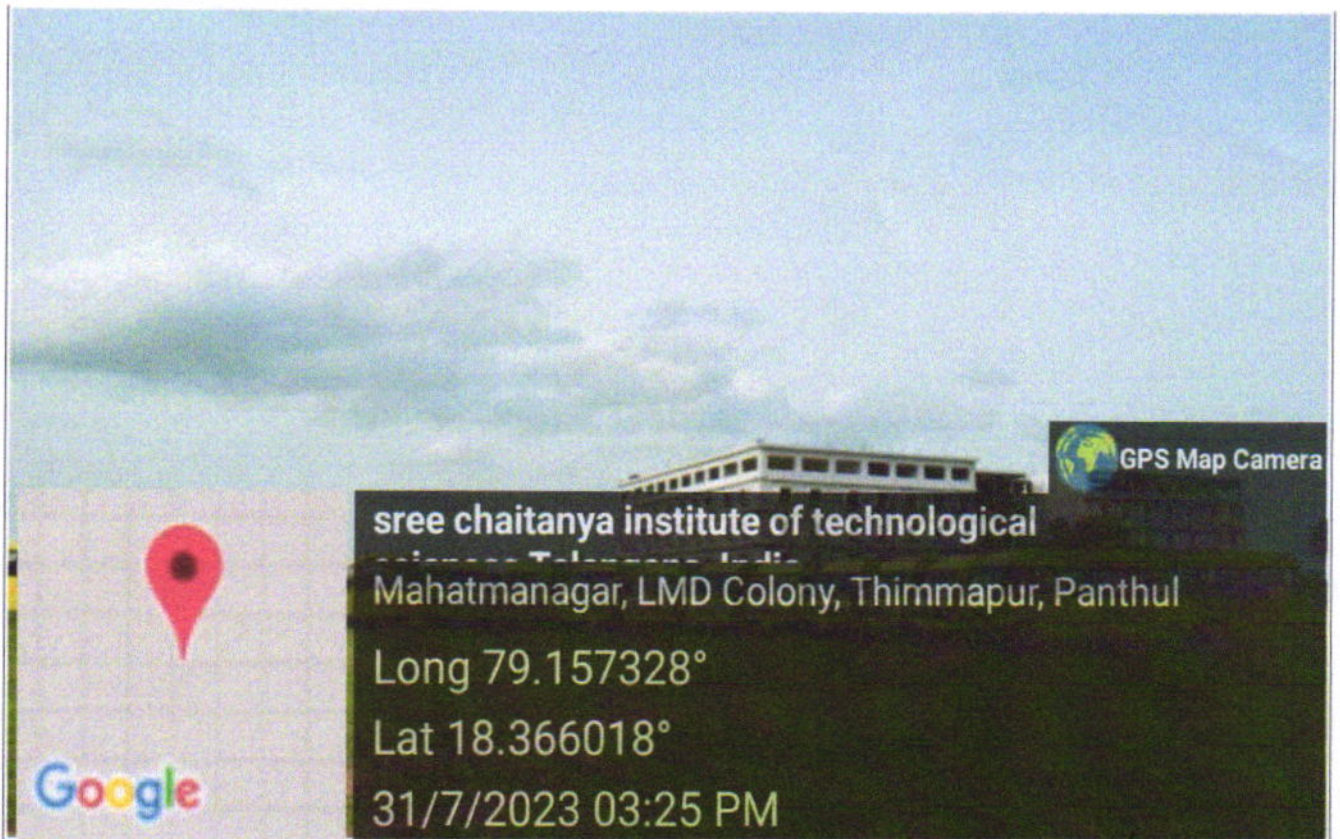
  
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L.M.D. Colony, KARIMNAGAR (T.S)

## GREEN CAMPUS MANAGEMENT

All plant and animal species - including humans - are linked together in a complex web of life; we depend upon biodiversity for our survival. Biodiversity is the key to healthy ecosystems and ultimately a healthy planet. It keeps the air and water clean, regulates our climate and provides us food, shelter, clothing, medicine and other useful products. Each part within this complex web diminishes a little when one part weakens or disappears.

Area under green cover(in sq ft or in acre)	3200 Sq. Ft.
Availability of Nursery on Campus(Yes/No)	No
Plant Protection Management	Yes
Number of plantations done in the year 2022-23	80
Extent of area(% of area)under tree cover	12%

Table 1: Green Area management



College Building

*[Signature]*  
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The trees work hard to keep the air we breathe clean and healthy. They are like sponges. Their leaves take in much of the poisonous unwanted carbon dioxide in the air, and replace it with the oxygen we need for healthy living. This system of absorbing gases on which all plants rely for their food is called photosynthesis. In this process, the plants with the help of sunlight, water, mineral and the green material called Chlorophyll within the leaves change the carbon-dioxide into food for themselves. When doing this they release oxygen into the air which is vital for all life on earth. At night when there is no sunlight the plant no longer makes food, so it does not release the same amount of oxygen.



### College LAAN

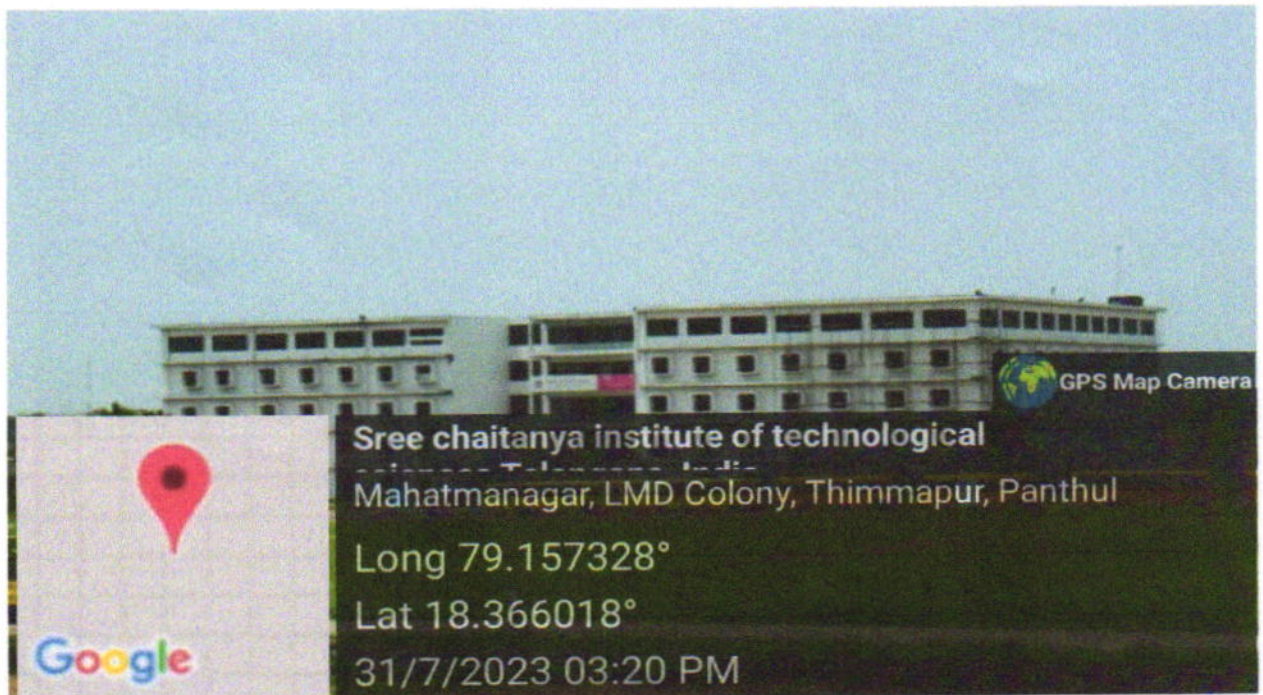
One is often told not to sleep with plants in one's room, as they will use up all the oxygen. However, at night although photosynthesis does take place the plants also rest, so that little oxygen is absorbed from the air and very little harm can be done to the ones sleeping in the room. The roots of trees dig deep into the earth and hold it together so that the rain and wind cannot wash or blow it away. This is very important as the earth has only a very thin layer (seldom more than one foot) of top soil covering it. If this is washed, blown or worn away leaving rock or sand on which no plants can grow then the earth would become a desert. The removal of this top-soil is called soil erosion. Scientists, all over the world are trying to find ways to prevent soil erosion. One of the most important ways is creating by planting more trees.

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Trees send up water vapor into the atmosphere through their leaves. When this vapor meets the cool air above it turns into drops of water which then fall as rain. They give us beauty, color and greenery. This is something which we often forget and fail to appreciate. They are the homes of many birds, animals and insects. Each of these is important in maintaining the balance of nature.

## Green Audit

Green Audit defined as documented, verification process of specified environmental activities, events, conditions, management system. Green Audit can create awareness in college staff as well as students which are our responsibility too, to save our environment and also can find the ways to improve environmental issues which are increasing day by day. Environmental problems such as recycling of waste, water conservation and recycling, pollution control, plantation, biodiversity conservation etc. can solve through Green Auditing. Good growth come from good education as well as good mental and physical health if we protect our environment, we can also protect our health.



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Green Audit means of assessing environmental performance. It is a systematic documented periodic and objective review by regulated entities of facility operations and practices related to meeting environmental requirement. It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all emissions to air, land

and water, legal constraints, the effects on the neighboring community, landscape and ecology, the public's perception of the operating company in the local area. Green audit does not stop all compliance with legislation. Nor is it a 'green washing' public relations exercise. Rather it is a total strategic approach to the organization's activities.

## **VISION**

To emerge as a leading educational institution by producing world class professionals using cutting edge technologies

## **MISSION**

To provide quality education by implementing state-of-the-art teaching-learning methods with professional values.

To continuously develop infrastructure and include high end technology for our students to have an up-to-date and intellectually inspiring environment.

To inculcate fervour for research, creativity, innovation and entrepreneurship, and to promote industry-institute interaction and collaboration.

To focus on over-all personality development of the students and staff by promoting co-and extra-curricular activities

## **College Green Committee**

The college Green committee was established in the college with proactive attitude towards conservation of the environment and objective of generating awareness and promoting environmental care at both individual and community level. The committee aims to create as per meeting atmosphere facilitating conversation, action and feedback on environmental issues engaging faculty, students and the general public. The institution looks at the macro-environmental perspective in the college and the society and envisions nurturing the environment with a greener future.

### **11.1 Green Campus Policy of College**

SCITS is committed to develop its campuses as places where education is combined with environmental friendly practices to promote Sustainable Development by o restricted entry of



automobiles, promoting the use of Bicycles and provision of Pedestrian Friendly path ways emanon use of disposable Plastics in line with the State



**College Laan**

Government Guidelines. Creating awareness with stakeholders on the need for maintaining greenery in the campus for sustainable ambience.

Encouraging all stakeholders to support and participate in ensuring green cover in the campus. o preserving age old trees and protect them to have prolonged life. Enhancement of green cover by landscaping with trees and plants. Conduct of green audit at regular intervals and implement the suggestions towards creating green campus. The faculty, staff and students are encouraged to contribute collectively to develop an eco-friendly sustainable campus and disseminate the concept of eco friendly culture to the nearby community and wherever possible.

SCITS envisions a clean and green university campus where ecological friendly practices and education combine to encourage sustainable and eco-friendly systems in the campus and beyond the campus. The green campus offers the organization a prospect to take the lead in redefining its green culture through promoting environmental ethics among students and staff The Institute also promotes clean and green campus through adopting, practicing and

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promoting environmentally friendly practices among students and staff to generate Eco consciousness among them and in the world around them.

**Objectives of the policy:** To compose students by understanding the importance of environment and its problem areas important function of the policy.

- To train students to create responsiveness amongst public.
- To encourage students to keep environment safe and clean.
- To encourage students to adopt environment friendly practices which include paper bags, save.
- To help the students to minimize the use of polluting product.

#### **Why Green Audit**

The excessive environmental degradation is creating the “Environmental poverty”. Thus, academic leaders should initiate the knowledge and benefits of resources so that their institutions respond to environmental issues and challenges. We believe that there is an urgent need to address these problems and reverse the trends of environment degradation.

#### **OBJECTIVES-**

- To assess environmental performance
- To promote environmental awareness
- To improve health
- To conserve resources
- To reduce waste
- To improve environmental standards
- To sustainable use of natural resources
- To develop responsibility about environment
- To enhance college profile

  
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**PLANTATION:**

To create Environmental awareness at the college campus we organize plantation program with all the staffs and students of our college. We try to plant more trees. To keep the greeneries in the campus we maintain the garden by paid staff under the guidance of garden committee members.

To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, principal, and all departments faculty members. In this session Vanamahotsav program was organized and about 100 or nominal, avenue,

Medicinal plant with rare and exotic beautiful trees was planted in botanical garden and other parts of college campus. To keep the greeneries in the campus, we regularly maintain the gardens which are looked after by paid staff under the guidance of garden committee members. Moreover, every year we try to plant new trees. Seasonal flower garden is also a unique feature of this college. There are so many plants are present in our college campus categorized below-

Category	Numbers(Approx.)
Herbs	30
Shrubs	20
Trees	107
Medicinal Plant	15

**IDENTIFICATION OF PLANT SPECIES:**

There are so many plant species are present at college campus. The member of the environment committee audited and identified of various plant species with the help of flora.

  
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## Carbon Footprint:

A carbon footprint is the amount of green house gases—primarily carbon dioxide— released into the atmosphere by an individual, event, organization, service, or product, expressed as carbon dioxide equivalent. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created. The release of carbon dioxide gas into the Earth’s atmosphere through human activities is commonly known as carbon emissions.

An important aspect of doing an audit is to be able to measure our impact so that we can determine better ways to manage the impact. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created.

**A)** The following activity/ utility is responsible for carbon emission:-

- Transportation
- Electricity purchased from Distribution companies.



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### 11.4.1 Carbon Emission by Transportation

Principal, Administrator, teaching & non-teaching staff and students comes to college either by two wheelers & four wheelers. The two major fuels used by the transport sector are petrol and diesel. These fuels are carbon intensive as they contain 80-85% of carbon by weight.

Sl. No.	Fuel Used	Types of Transport	Persons	Numbers of Persons	A	B	C	D=C/B	E	F=E x D	G	H=G x F x A
					No. of Vehicle Used	mileage	Av. distance in KM	Fuel Consumed per Day per Vehicle in ltr	Total working days	Petrol Consumption Per Vehicle in a year	Emission factor	Total emission
1	No Fuel	Bicycle	Students	4	4	3			180			
2	Petrol	Two Wheeler	Students	1699	500	60	20	0.66	180	118.8	2.67	1585.98
			Non-Teaching Staff	60	15	60	20	0.66	180	118.8	2.67	4757.94
3	Petrol	Four Wheeler	Teaching Staff	112	50	60	20	0.66	180	118.8	2.67	1585.98
			Teaching Staff	80	5	20	20	0.66	180	118.8	2.67	1585.98
4	Diesel	Auto	Students									
			Students	1000								
		Bus	Teaching Staff	50								
Total Co2 emission in Kg Co2 eq. per Year												

Table1: Carbon emission by transport

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Thus, total emission by the transport is  $\text{KGC}\text{O}_2$  eq. Per year: 164941.92

### Carbon Emission by Electricity

Electricity is taken by grid which uses coal for generating electricity or DG set which uses diesel for electricity generation.

Parameter	Emission Factor(A)	Unit in KWH (B)	Total emission (C=A x B)
Grid Electricity	0.82	159256	
<b>Total Kg CO<sub>2</sub>Eq. Emission by Electricity</b>			<b>130590</b>

Table2: Carbon Emission by Electricity

Thus, total emission by purchased electricity is 1, 30,590 Kg CO<sub>2</sub> Eq.

### Total Carbon dioxide emission at S C I T S

Area	CO <sub>2</sub> eq.emission in KG
Electricity	130590
Transport	180801
<b>Total</b>	<b>311391</b>

Table3: Total Carbon dioxide emission at SCITS

### Reduction of Carbon Emission

**B)** The following installation/ activity is responsible for reduction in carbon emission:-

- Composting
- Tree plantation

#### Reduction of Carbon Emission due to absorption of CO<sub>2</sub> by Tree Plantation

Planting is a great way to help sequester carbon emissions. Through photosynthesis is trees absorb carbon dioxide to produce oxygen, food and wood.

Particulars of Flora	Numbers	Carbon absorption by one tree Per year	Total Carbon Dioxide in Kg
Full grown Tree	107	6.8	727.6
Semi Grown Tree		3.4	
Quarter grown plants	30	1.7	51
<b>Total Carbon dioxide absorption by trees</b>	137	11.9	778.6

Table4: Carbon absorption by tree plantation.

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### Total Reduction in Carbon dioxide emission at SCITS

Area	Reduction in CO2 eq. emission in KG
Trees	137
<b>Total</b>	<b>778.6</b>

Table5: Total Reduction in Carbon dioxide emission

  
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## RECOMMENDATIONS

### 12.1 Formation of ENCON Club:


We recommend to formation of the ENCON Club in SCITS for spreading awareness on the importance of energy conservation. ENCON Club will participate in all energy conservation activities and organize program with the support of Telangana State Renewable Energy Development Agency, (TREDA) Karimnagar and Bureau of Energy Efficiency, (BEE) New Delhi.

Every year, India observes National Energy Conservation on December 14. The day is organized by the Bureau of Energy Efficiency (BEE) – which operates under the Ministry of Power, aiming to present India's stellar achievements in cost-efficient energy production and resource conservation.

ENCON Club will celebrate "Energy Conservation Day" on 14<sup>th</sup> December, each year. Further plans for the future may be discussed on this day, targeting holistic development as the main goal towards mitigation of climate change. It would not only help in imparting knowledge on energy efficiency but also in its implementation in households and institutions.

### Objective of ENCON Club

The objective of the club is to create awareness among the students, staff and teachers and equip them for efficient management of all forms of energy, top remote energy efficiency and energy conservation. The club will keen to spread "Energy Conservation Messages" in the society by conducting awareness programs to students and public.

  
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## Technical Description

### Energy Efficient Gorilla Fan/ Super fan

Every energy efficient Gorilla/Super fan uses BLDC (Brushless Direct Current) motor. BLDC motor has no mechanical brush for commutation of the windings. Commutation is deployed with the help of smart electronics. As a result the fan runs internally at 24V and consumes just 28W at full speed.

#### Key features of BLDC design:

- Extremely low heat & associated power loss
- Better flexibility over controlling motor speed
- Smart motor tuning algorithm
- No spark and minimal electrical noise
- Sensor less design
- ABLDC fan takes in AC voltage and internally converts it into DC using SMPS.
- The main difference between BLDC and ordinary DC fans is the commutation method. A commutation is basically the technique of changing the direction of current in the motor for the rotational movement. In a BLDC motor, as there are no brushes so the commutation is done by the driving algorithm in the Electronics. The main advantage is that over a period of time, due to mechanical contact in a brushed motor the commutators can undergo wear and tear, this thing is eliminated in BLDC Motor making the motor more rugged for long-term use.



Figure1: BLDC motor of Energy Efficient fan

- To explain, BLDC technology in simpler terms, BLDC uses a combination of Permanent Magnets and Electronics to achieve the kind of efficiency and performance it delivers. ABLDC fan composes of 3 main components:
  1. Stator
  2. Rotor
  3. Electronics.

  
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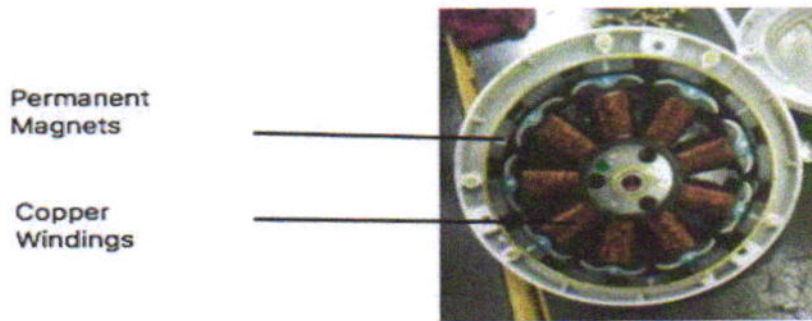


Figure2:Inside view of BLDC motor

- The electronics contains a driving algorithm which drives the BLDC motor. As discussed earlier in a BLDC motor the position of magnets in the fan is sensed by electronics that either uses a Hall Effect sensor or back EMF. Modern BLDC motors use Back EMF for commutation due to proven disadvantages of Hall Effect sensor over period of time.
- To explain it in easier terms, we can take an example of a donkey who has a carrot fixed over his head as per shown in the picture below:
- Consider the Stator to be the Carrot and the donkey to be the Magnets. The polarity of the stator will keep changing, due to attraction the Magnets will create rotational moment, just like how the donkey tries hard to reach the carrot in the picture.



- Permanent magnets used in rotor are responsible for mass reduction in power consumption compared to windings used in the stator in an ordinary induction fan. One added advantage in a BLDC fans due to use of an electronic circuit is that you can add several additional features increase convenience, few example of the same are sleep mode, timer mode also it is compatible with Home automation systems. Most of the BLDC Ceiling fans are operated by remote unlike traditional regulator reducing the purchase cost of regulator.

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- Compared to regular induction fan, a BLDC fan can save up to Rs1000-1500/Year/fan. And because there is no heating of the motor, the life of a BLDC fan is also expected to be much higher than ordinary fans.

### 12.2 Enhancement of Energy Efficacy of light fittings:

Cleaning of tube-lights/bulbs to be done periodically, to remove dustcover It. It affects on lamp efficacy (lm/watt).

  
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**General Recommendation for Energy Saving in Office Equipment**

Equipment	Wattage	Comments
CRT Monitor	100 - 120W (during operating condition)	CRT monitors consume a lot of power, much of which is wasted as heat, and represent the largest power consumption component in a typical desktop computer. Emit potentially harmful radiation. Fortunately, most CRT monitors these days are legacy equipment as new computers are generally supplied with LCD monitors .Unfortunately; most CRT monitors end up in landfill.
Desktop Computer	150W (during operating condition)	Power consumption will differ significantly depending on whether a CRT or LCD monitor is used. In home and office situations where it is necessary to run multiple desktop computers, it may be possible to make significant power savings by running a single terminal server computer with several LCD monitors and key boards attached. Terminal server computer scan also greatly simplify network management, software upgrades, etc
Photocopier	7-30W (Sl.Mode)40-300W (Standby)200-1300W (Op. condition)	Most of the energy used in a photocopiers consumed by the controllers, which are usually kept hot on stand-bay, consuming from 40-300W. Significant energy savings (40%to60%) can be made by ensuring that photocopiers are switched off at night and on weekends. Some photocopiers consume up to 30 watts even when switched off, so photocopiers should be switched off at the power outlet tone sure they are really "off".
LCD Monitor	30-50W (during operating condition)	LCD monitors typically require about 30%of the power required for a CRT monitor with the same screen area. In addition, the amount of heat generated by an LCD monitor is considerably less than a CRT monitor, resulting in a lower load on ACs. Building cooling needs may be decreased by up to 20%.

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Inkjet Printer (during operating condition)	120W	Inkjet printers use relatively little power in comparison to laser printers. From an energy consumption point of view, inkjets are preferable to lasers. Unfortunately, they typically cost more to un on a cost -Per -print basis and sometimes produce less than optimum results
Laser Printer (during operating condition)	25-80W (Standby)150-1100W	Laser printers consume significant amounts of power even when in standby mode. Over the course of an 8-10hr working day, a laser printer could consume around 1kWh of energy. On the other hand, laser printers are cheaper to run on a cost-per page basis and generally produce better results. Both the number of laser printers used, and the number of hours they are operated for, should be minimized. As with printing of any kind, office procedures should be developed which minimize the need for printing to paper
Laptop Computer (during operating condition)	15-40W	Laptop computer power consumption is typically 10% to 25% of that of a desktop computer. In situations such as an office or home office, where computers may operate for 8to10hours a day, this difference is significant and could represent an energy saving of up to 1kWh per day.

**Table6: General Recommendation for Energy Saving in Office Equipment**

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# AUDIT CERTIFICATE

PRESENTED TO

## **SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES**

**Karimnagar, Telangana.**

Has been assess by MQCIUL for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirements of

## **Green Audit**

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

Auditor Signature

Date of Audit: 12.06.2023.



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TELANGANA, INDIA.

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*[Handwritten Signature]*  
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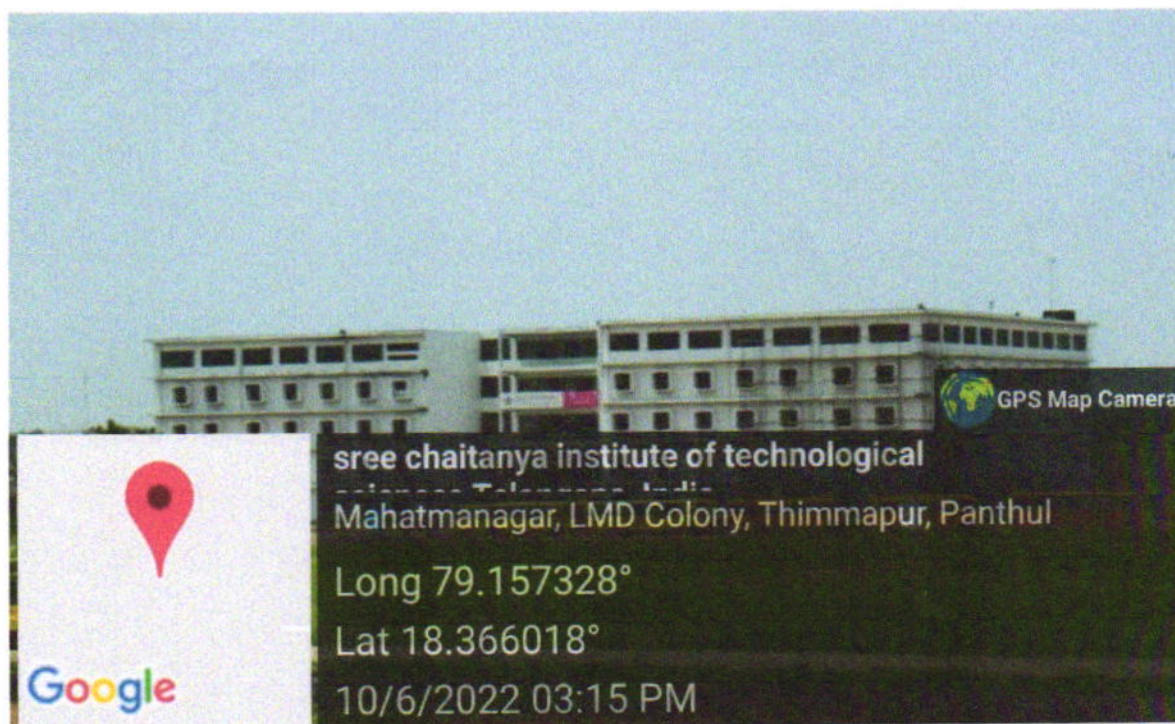
  
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Number of plantations done in the year 2021-22	50
Extent of area(% of area)under tree cover	10%

Table26: Green Area management



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than one foot) offer tile soil covering it. If this is washed, blown or worn away leaving rock or sand on which no plants can grow then the earth would become a desert. The removal of this top-soil is called soil erosion. Scientists, all over the world are trying to find ways to prevent soil erosion. One of them optima portent ways is creating by planting more trees.

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*Prithvi Raj*  
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College laan

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Encouraging all stakeholders to support and participate in ensuring green cover in the campus. o preserving age old trees and protect them to have prolonged life. Enhancement of green cover by landscaping with trees and plants. Conduct of green audit at regular intervals and implement the suggestions towards creating green campus. The faculty, staff and students are encouraged to contribute collectively to develop an eco-friendly sustainable campus and disseminate the concept of eco friendly culture to the community and wherever possible.

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*Sree Chaitanya Institute of Technological Sciences:  
L.M.D. Colony, KARIMNAGAR (T.S.)*

SCITS envisions a clean and green university campus where ecological friendly practices and education combine to encourage sustainable and eco-friendly systems in the campus and beyond the campus. The green campus offers the organization a prospect to take the lead in redefining its green culture through promoting environmental ethics among students and staff. The Institute also promotes clean and green campus through adopting, practicing and promoting environmentally friendly practices among students and staff to generate Eco consciousness among them and in the world around them.

**Objectives of the policy:** To compose students by understanding the importance of environment and its problem areas. Important function of the policy.

- To train students to create responsiveness amongst public.
- To encourage students to keep environment safe and clean.
- To encourage students to adopt environment friendly practices which include paper bags, save.
- To help the students to minimize the use of polluting product.

#### **Why Green Audit**

The excessive environmental degradation is creating the “Environmental poverty”. Thus, academic leaders should initiate the knowledge and benefits of resources so that their institutions respond to environmental issues and challenges. We believe that there is an urgent need to address these problems and reverse the trends of environment degradation.

#### **OBJECTIVES-**

- To assess environmental performance
- To promote environmental awareness
- To improve health
- To conserve resources



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- To reduce waste
- To improve environmental standards
- To sustainable use of natural resources
- To develop responsibility about environment
- To enhance college profile

#### PLANTATION-

To create Environmental awareness at the college campus we organize plantation program with all the staffs and students of our college. We try to plant more trees. To keep the greeneries in the campus we maintain the garden by paid staff under the guidance of garden committee members.

To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, principal, and all departments faculty members. In this session vanmahotsav program was organized and about 100 or nominal, avenue, Medicinal plant with rare and exotic beautiful trees was planted in botanical garden and other parts of college campus. To keep the greeneries in the campus, we regularly maintain the gardens which are looked after by paid staff under the guidance of garden committee members. Moreover, every year we try to plant new trees. Seasonal flower garden is also a unique feature of this college. There are so many plants are present in our college campus categorized below-

Category	Numbers(Approx.)
Herbs	30
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### IDENTIFICATION OF PLANT SPECIES:

There are so many plant species are present at college campus. The member of the environment committee audited and identified of various plant species with the help of flora.

### Carbon Footprint

A carbon footprint is the amount of green house gases—primarily carbon dioxide— released into the atmosphere by an individual, event, organization, service, or product, expressed as carbon dioxide equivalent. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created. The release of carbon dioxide gas into the Earth’s atmosphere through human activities is commonly known as carbon emissions.

An important aspect of doing an audit is to be able to measure our impact so that we can determine better ways to manage the impact. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created.

**C)** The following activity/ utility is responsible for carbon emission:-

- Transportation
- Electricity purchased from Distribution companies.

  
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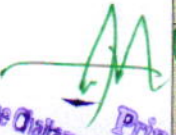
**11.4.2 Carbon Emission by Transportation**

Principal, Administrator, teaching & non-teaching staff and students comes to college either by two wheelers & four wheelers. The two major fuels used by the transport sector are petrol and diesel. These fuels are carbon intensive as they contain 80-85% of carbon by weight.

Sl. No.	Fuel Used	Types of Transport	Persons	Numbers of Persons	A	B	C	D=C/B	E	F=E x D	G	H=G x F x A
					Nos. of Vehicle Used	mileage	Av. distance in KM	Fuel Consumed per Day per Vehicle in ltr	Total working days	Petrol Consumption Per Vehicle in a year	Emission factor	Total emission
1	No Fuel	Bicycle	Students	4	4		3		180			
2	Petrol	Two Wheeler	Non-Teaching Staff	1699	500	60	20	0.66	180	118.8	2.67	158598
			Students	60	15	60	20	0.66	180	118.8	2.67	4757.94
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3	Petrol	Four Wheeler	Teaching Staff	80	5	20	0.66	180	118.8	2.67	1585.98	
4	Diesel	Auto	Students	1000								
			Teaching Staff	50								
<b>Total Co2 emission in Kg Co2 eq per Year</b>												
												<b>130590</b>

Table1: Carbon emission by transport

**LMD COLONY, THIMMAPUR, KARIMNAGAR, T.S. - 505527**

  
 Principal  
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 L.M.D. Colony, KARIMNAGAR

Thus, total emission by the transport is KGCO<sub>2</sub>eq. Per year. **130590**

### Carbon Emission by Electricity

Electricity is taken by grid which uses coal for generating electricity or DG set which uses diesel for electricity generation.

Parameter	Emission Factor(A)	Unit in KWH (B)	Total emission (C=A x B)
Grid Electricity	0.82	159256	
<b>Total Kg CO<sub>2</sub>Eq. Emission by Electricity</b>			<b>130590</b>

Table2: Carbon Emission by Electricity

Thus, total emission by purchased electricity is 1, 30,590 Kg CO<sub>2</sub>Eq.

### Total Carbon dioxide emission at S C I T S

Area	CO <sub>2</sub> eq.emission in KG
Electricity	130590
Transport	180801
<b>Total</b>	<b>311391</b>

Table3: Total Carbon dioxide emission at SCITS

### Reduction of Carbon Emission

**D)** The following installation/ activity is responsible for reduction in carbon emission:-

- Composting
- Tree plantation

#### Reduction of Carbon Emission due to absorption of CO<sub>2</sub> by Tree Plantation

Planting is a great way to help sequester carbon emissions. Through photosynthesis is trees absorb carbon dioxide to produce oxygen, food and wood.

Particulars of Flora	Numbers	Carbon absorption by one tree Per year	Total Carbon Dioxide in Kg
Full grown Tree	107	6.8	727.6
Semi Grown Tree		3.4	
Quarter grown plants	30	1.7	51
<b>Total Carbon dioxide absorption by trees</b>			


Table4: Carbon absorption by tree plantation.



**Total Reduction in Carbon dioxide emission at SCITS**

Area	Reduction in CO2 eq. emission in KG
Trees	137
<b>Total</b>	<b>778.6</b>

Table5: Total Reduction in Carbon dioxide emission

  
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## RECOMMENDATIONS

### 12.3 Formation of ENCON Club:

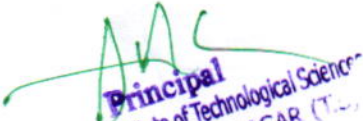
We recommend to formation of the ENCON Club in SCITS for spreading awareness on the importance of energy conservation. ENCON Club will participate in all energy conservation activities and organize program with the support of Telangana State Renewable Energy Development Agency, (TREDA) Karimnagar and Bureau of Energy Efficiency, (BEE) New Delhi.

Every year, India observes National Energy Conservation on December 14. The day is organized by the Bureau of Energy Efficiency (BEE) – which operates under the Ministry of Power, aiming to present India's stellar achievements in cost-efficient energy production and resource conservation.

ENCON Club will celebrate "Energy Conservation Day" on 14<sup>th</sup> December, each year. Further plans for the future may be discussed on this day, targeting holistic development as the main goal towards mitigation of climate change. It would not only help in imparting knowledge on energy efficiency but also in its implementation in households and institutions.

### Objective of ENCON Club

The objective of the club is to create awareness among the students, staff and teachers and equip them for efficient management of all forms of energy, top remote energy efficiency and energy conservation. The club will keen to spread "Energy Conservation Messages" in the society by conducting awareness programs to students and public.

  
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## Technical Description

### Energy Efficient Gorilla Fan/ Super fan

Every energy efficient Gorilla/Super fan uses BLDC (Brushless Direct Current) motor. BLDC motor has no mechanical brush for commutation of the windings. Commutation is deployed with the help of smart electronics. As a result the fan runs internally at 24V and consumes just 28W at full speed.

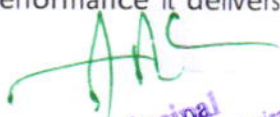
#### Key features of BLDC design:

- Extremely low heat & associated power loss
- Better flexibility over controlling motor speed
- Smart motor tuning algorithm
- No spark and minimal electrical noise
- Sensor less design
- ABLDC fan takes in AC voltage and internally converts it into DC using SMPS.
- The main difference between BLDC and ordinary DC fans is the commutation method. A commutation is basically the technique of changing the direction of current in the motor for the rotational movement. In a BLDC motor, as there are no brushes so the commutation is done by the driving algorithm in the Electronics. The main advantage is that over a period of time, due to mechanical contact in a brushed motor the commentators can undergo wear and tear, this thing is eliminated in BLDC Motor making the motor more rugged for long-term use.



Figure8: BLDC motor of Energy Efficient fan

- To explain, BLDC technology in simpler terms, BLDC uses a combination of Permanent Magnets and Electronics to achieve the kind of efficiency and performance it delivers. ABLDC fan composes of 3 main components:
  1. Stator
  2. Rotor
  3. Electronics.

  
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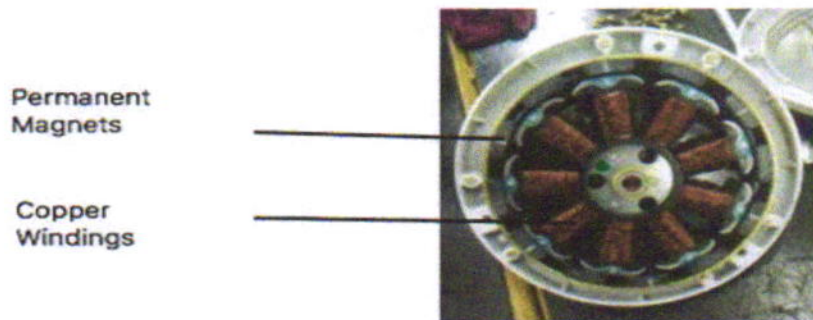


Figure1: Inside view of BLDC motor

- The electronics contains a driving algorithm which drives the BLDC motor. As discussed earlier in a BLDC motor the position of magnets in the fan is sensed by electronics that either uses a Hall Effect sensor or back EMF. Modern BLDC motors use Back EMF for commutation due to proven disadvantages of Hall Effect sensor over period of time.
- To explain it in easier terms, we can take an example of a donkey who has a carrot fixed over his head as per shown in the picture below:
- Consider the Stator to be the Carrot and the donkey to be the Magnets. The polarity of the stator will keep changing, due to attraction the Magnets will create rotational moment, just like how the donkey tries hard to reach the carrot in the picture.



- Permanent magnets used in rotor are responsible for mass reduction in power consumption compared to windings used in the stator in an ordinary induction motor. An added advantage in a BLDC fans due to use of an electronic circuit is that


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several additional features increase convenience, few example of the same are sleep mode, timer mode also it is compatible with Home automation systems. Most of the BLDC Ceiling fans are operated by remote unlike traditional regulator reducing the purchase cost of regulator.

- Compared to regular induction fan, a BLDC fan can save up to Rs1000-1500/Year/fan. And because there is no heating of the motor, the life of a BLDC fan is also expected to be much higher than ordinary fans.

#### **12.4 Enhancement of Energy Efficacy of light fittings:**

Cleaning of tube-lights/bulbs to be done periodically, to remove dustcover It. It affects on lamp efficacy (lm/watt).



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**General Recommendation for Energy Saving in Office Equipment**

Equipment	Wattage	Comments
CRT Monitor	100 - 120W (during operating condition)	CRT monitors consume a lot of power, much of which is wasted as heat, and represent the largest power consumption component in a typical desktop computer. Emit potentially harmful radiation. Fortunately, most CRT monitors these days are legacy equipment as new computers are generally supplied with LCD monitors. Unfortunately; most CRT monitors end up in landfill.
Desktop Computer	150W (during operating condition)	Power consumption will differ significantly depending on whether a CRT or LCD monitor is used. In home and office situations where it is necessary to run multiple desktop computers, it may be possible to make significant power savings by running a single terminal server computer with several LCD monitors and key boards attached. Terminal server computer scan also greatly simplify network management, software upgrades, etc
Photocopier	7-30W (Sl.Mode)40-300W (Standby)200-1300W (Op. condition)	Most of the energy used in a photocopiers consumed by the controllers, which are usually kept hot on stand-bay, consuming from 40-300W. Significant energy savings (40%to60%) can be made by ensuring that photocopiers are switched off at night and on weekends. Some photocopiers consume up to 30 watts even when switched off, so photocopiers should be switched off at the power outlet tone sure they are really "off".
LCD Monitor	30-50W (during operating condition)	LCD monitors typically require about 30%of the power required for a CRT monitor with the same screen area. In addition, the amount of heat generated by an LCD monitor is considerably less than a CRT monitor, resulting in a lower load on ACs. Building cooling needs may be decreased by up to 20%.

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Inkjet Printer	120W (during operating condition)	Inkjet printers use relatively little power in comparison to laser printers. From an energy consumption point of view, inkjets are preferable to lasers. Unfortunately, they typically cost more to run on a cost -Per -print basis and sometimes produce less than optimum results
Laser Printer	25-80W (Standby)150-1100W (during operating condition)	Laser printers consume significant amounts of power even when in standby mode. Over the course of an 8-10hr working day, a laser printer could consume around 1kWh of energy. On the other hand, laser printers are cheaper to run on a cost-per page basis and generally produce better results. Both the number of laser printers used, and the number of hours they are operated for, should be minimized. As with printing of any kind, office procedures should be developed which minimize the need for printing to paper
Laptop Computer	15-40W (during operating condition)	Laptop computer power consumption is typically 10% to 25% of that of a desktop computer. In situations such as an office or home office, where computers may operate for 8to10hours a day, this difference is significant and could represent an energy saving of up to 1kWh per day.

**Table6: General Recommendation for Energy Saving in Office Equipment**

*ANC*  
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# AUDIT CERTIFICATE

PRESENTED TO

## **SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES**

**Karimnagar, Telangana.**

Has been assess by MQCIUL for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirements of

## **Green Audit**

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

Auditor Signature

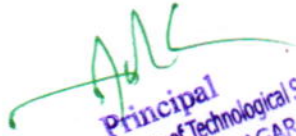
Date of Audit: 13.06.2022.



MARK CERTIFICATION CONSULTANTS, 8-1-402/A/5/2, TOLICHOWKI, HYDERABAD -500008,  
TELANGANA, INDIA.

Website: [WWW.MARKCERTIFICATION.COM](http://WWW.MARKCERTIFICATION.COM)

Email: [INFO@MARKCERTIFICATION.COM](mailto:INFO@MARKCERTIFICATION.COM)

  
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TAKSHSHILA EDUCATIONAL SOCIETY'S  
SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES  
LMD Colony, Thimmapur Village, Dist – Karimnagar,  
Telangana – 505527, India.

(Approved by AICTE, Affiliated to JNTUH)

## **Green Audit Report**

**2020-21**

*Principal*  
Sree Chaitanya Institute of Technological Sciences  
L.M.D. Colony, KARIMNAGAR (T.S.)

# Green Audit

- Green Campus Management and Carbon Foot print of the institute for Environmental Consciousness and Sustainability.
- Green Practices
- Students, staff using a) Bicycles b) Public Transport  
c) Pedestrian friendly roads
- Plastic-free campus
- Paperless office
- Green landscaping with trees and plants

  
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## GREEN CAMPUS MANAGEMENT

All plant and animal species - including humans - are linked together in a complex web of life; we depend upon biodiversity for our survival. Biodiversity is the key to healthy ecosystems and ultimately a healthy planet. It keeps the air and water clean, regulates our climate and provides us food, shelter, clothing, medicine and other useful products. Each part within this complex web diminishes a little when one part weakens or disappears.

Area under green cover(in sq ft or in acre)	3200 Sq. Ft.
Availability of Nursery on Campus(Yes/No)	No
Plant Protection Management	Yes
Number of plantations done in the year 2020-2021	70
Extent of area(% of area)under tree cover	8%

Table26: Green Area management



College buses

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L.M.D. Colony, KARIMNAGAR (T.S)

The trees work hard to keep the air we breathe clean and healthy. They are like sponges. Their leaves take in much of the poisonous unwanted carbon dioxide in the air, and replace it with the oxygen we need for healthy living. This system of absorbing gases on which all plants rely for their food is called photosynthesis. In this process, the plants with the help of sunlight, water, mineral and the green material called Chlorophyll within the leaves change the carbon-dioxide into food for themselves. When doing this they release oxygen into the air which is vital for all life on earth. At night when there is no sunlight the plant no longer makes food, so it does not release the same amount of oxygen.



College lawn

One is often told not to sleep with plants in one's room, as they will use up all the oxygen. However, at night although photosynthesis does take place the plants also rest, so that little oxygen is absorbed from the air and very little harm can be done to the ones sleeping in the room. The roots of trees dig deep into the earth and hold it together so that the rain and wind cannot wash or blow it away. This is very important as the earth has only a very thin layer (seldom more than one foot) of soil covering it. If this is washed, blown or worn away leaving rock or sand on which no plants can grow then the earth would become a desert. The removal of this top-soil is called soil erosion. Scientists, all over the world are trying to find ways to prevent soil erosion. One of the most important ways is creating by planting more trees.

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Trees send up water vapor into the atmosphere through their leaves. When this vapor meets the cool air above it turns into drops of water which then fall as rain. They give us beauty, color and greenery. This is something which we often forget and fail to appreciate. They are the homes of many birds, animals and insects. Each of these is important in maintaining the balance of nature.

### **Green Audit**

Green Audit defined as documented, verification process of specified environmental activities, events, conditions, management system. Green Audit can create awareness in college staff as well as students which are our responsibility too, to save our environment and also can find the ways to improve environmental issues which are increasing day by day. Environmental problems such as recycling of waste, water conservation and recycling, pollution control, plantation, biodiversity conservation etc. can solve through Green Auditing. Good growth come from good education as well as good mental and physical health if we protect our environment, we can also protect our health.



**College Building**

Green Audit means of assessing environmental performance. It is a systematic, documented, periodic and objective review by regulated entities of facility operations and practices related to environmental performance.

meeting environmental requirement. It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all emissions to air, land and water, legal constraints, the effects on the neighboring community, landscape and ecology, the public's perception of the operating company in the local area. Green audit does not stop all compliance with legislation. Nor is it a 'green washing' public relations exercise. Rather it is a total strategic approach to the organization's activities.

### **VISION**

To emerge as a leading educational institution by producing world class professionals using cutting edge technologies

### **MISSION**

To provide quality education by implementing state-of-the-art teaching-learning methods with professional values.


To continuously develop infrastructure and include high end technology for our students to have an up-to-date and intellectually inspiring environment.

To inculcate fervour for research, creativity, innovation and entrepreneurship, and to promote industry-institute interaction and collaboration.

To focus on over-all personality development of the students and staff by promoting co-and extra-curricular activities

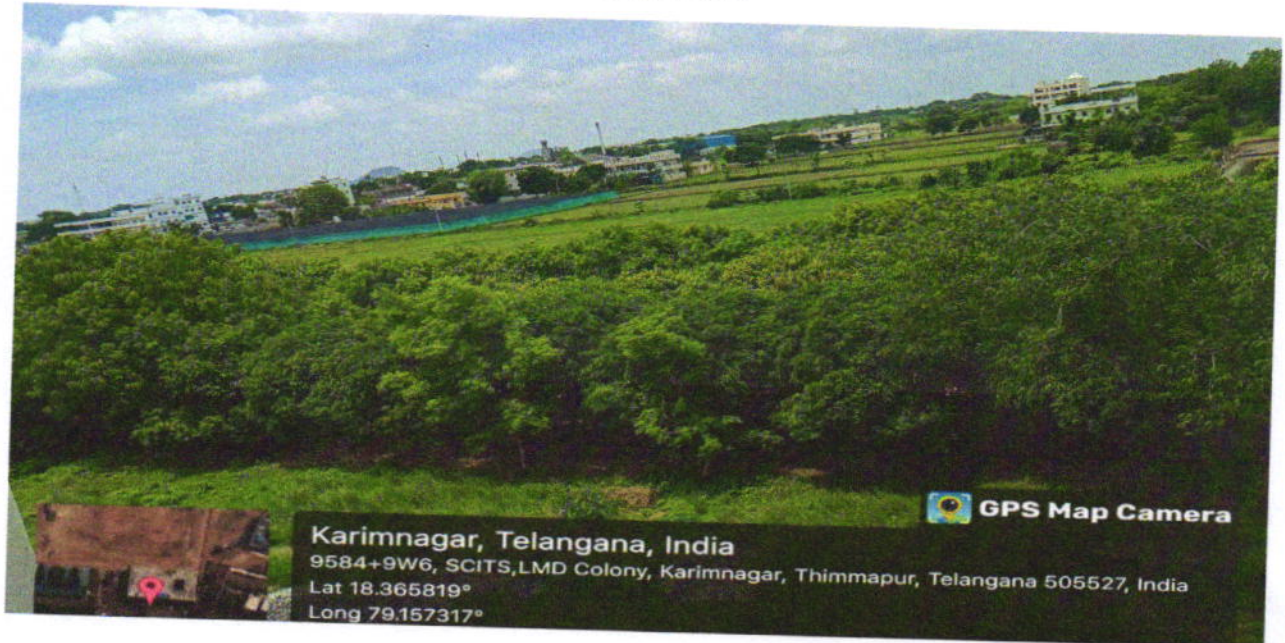
### **College Green Committee**

The college Green committee was established in the college with proactive attitude towards conservation of the environment and objective of generating awareness and promoting environmental care at both individual and community level. The committee aims to create as per meeting atmosphere facilitating conversation, action and feedback on environmental issues engaging faculty, students and the general public. The institution looks at the macro-environmental perspective in the college and the society and envisions nurturing the environment with a greener future.

  
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L.M.D. Colony, KARIMNAGAR (T.S)

### 11.3 Green Campus Policy of College

SCITS is committed to develop its campuses as places where education is combined with environmental friendly practices to promote Sustainable Development by o restricted entry of automobiles, promoting the use of Bicycles and provision of Pedestrian Friendly path ways emanon use of disposable Plastics in line with the State



College green environment



College laan

*Sree Chaitanya Institute of Technological Sciences*  
*L.M.D. Colony, KARIMNAGAR (T.S)*

Government Guidelines. Creating awareness with stakeholders on the need for maintaining greenery in the campus for sustainable ambience.

Encouraging all stakeholders to support and participate in ensuring green cover in the campus. o preserving age old trees and protect them to have prolonged life. Enhancement of green cover by landscaping with trees and plants. Conduct of green audit at regular intervals and implement the suggestions towards creating green campus. The faculty, staff and students are encouraged to contribute collectively to develop an eco-friendly sustainable campus and disseminate the concept of eco friendly culture to the nearby community and wherever possible.

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institutions respond to environmental issues and challenges. We believe that there is an urgent need to address these problems and reverse the trends of environment degradation.

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- To reduce waste
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M.D. Colony, K.A.F

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created. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions.

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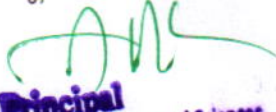
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Sree Chaitanya Institute of Technological Sciences  
L.M.D. Colony, KARIMNAGAR (T.S)

### 11.4.3 Carbon Emission by Transportation

Principal, Administrator, teaching & non-teaching staff and students comes to college either by two wheelers & four wheelers. The two major fuels used by the transport sector are petrol and diesel. These fuels are carbon intensive as they contain 80-85% of carbon by weight.

Sl. No.	Fuel Used	Types of Transport	Persons	Numbers of Persons	A	B	C	D=C/B	E	F=E x D	G	H=G x F x A
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			Students	1000								
4	Diesel	Auto	Students									
			Teaching Staff	50								
<b>Total Co2 emission in Kg Co2 eq per Year</b>												<b>130590</b>

Table1: Carbon emission by transport

  
**Principal**  
 Sree Chaitanya Institute of Technological Sciences  
 L.M.D. Colony, KARIMNAGAR (T.S)

Thus, total emission by the transport is  $\text{KGCO}_2\text{eq}$ . Per year. **130590**

### Carbon Emission by Electricity

Electricity is taken by grid which uses coal for generating electricity or DG set which uses diesel for electricity generation.

Parameter	Emission Factor(A)	Unit in KWH (B)	Total emission (C=A x B)
Grid Electricity	0.82	159256	
<b>Total Kg CO<sub>2</sub>Eq. Emission by Electricity</b>			<b>130590</b>

Table2: Carbon Emission by Electricity

Thus, total emission by purchased electricity is 1, 30,590 Kg CO<sub>2</sub> Eq.

### Total Carbon dioxide emission at S C I T S

Area	CO <sub>2</sub> eq.emission in KG
Electricity	130590
Transport	180801
<b>Total</b>	<b>311391</b>

Table3: Total Carbon dioxide emission at SCITS

### Reduction of Carbon Emission

**F)** The following installation/ activity is responsible for reduction in carbon emission:-

- Composting
- Tree plantation

#### Reduction of Carbon Emission due to absorption of CO<sub>2</sub> by Tree Plantation

Planting is a great way to help sequester carbon emissions. Through photosynthesis is trees absorb carbon dioxide to produce oxygen, food and wood.

Particulars of Flora	Numbers	Carbon absorption by one tree Per year	Total Carbon Dioxide in Kg
Full grown Tree	107	6.8	727.6
Semi Grown Tree		3.4	
Quarter grown plants	30	1.7	51
<b>Total Carbon dioxide absorption by trees</b>			

Table4: Carbon absorption by tree plantation.

**Total Reduction in Carbon dioxide emission at SCITS**

Area	Reduction in CO2 eq. emission in KG
Trees	137
<b>Total</b>	<b>778.6</b>

Table5: Total Reduction in Carbon dioxide emission

## RECOMMENDATIONS

### 12.5 Formation of ENCON Club:

We recommend to formation of the ENCON Club in SCITS for spreading awareness on the importance of energy conservation. ENCON Club will participate in all energy conservation activities and organize program with the support of Telangana State Renewable Energy Development Agency, (TREDA) Karimnagar and Bureau of Energy Efficiency, (BEE) New Delhi.


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## Technical Description

### Energy Efficient Gorilla Fan/ Super fan

Every energy efficient Gorilla/Super fan uses BLDC (Brushless Direct Current) motor. BLDC motor has no mechanical brush for commutation of the windings. Commutation is deployed with the help of smart electronics. As a result the fan runs internally at 24V and consumes just 28W at full speed.

#### Key features of BLDC design:

- Extremely low heat & associated power loss
- Better flexibility over controlling motor speed
- Smart motor tuning algorithm
- No spark and minimal electrical noise
- Sensor less design
- ABLDC fan takes in AC voltage and internally converts it into DC using SMPS.
- The main difference between BLDC and ordinary DC fans is the commutation method. A commutation is basically the technique of changing the direction of current in the motor for the rotational movement. In a BLDC motor, as there are no brushes so the commutation is done by the driving algorithm in the Electronics. The main advantage is that over a period of time, due to mechanical contact in a brushed motor the commentators can undergo wear and tear, this thing is eliminated in BLDC Motor making the motor more rugged for long-term use.



Figure1: BLDC motor of Energy Efficient fan

- To explain, BLDC technology in simpler terms, BLDC uses a combination of Permanent Magnets and Electronics to achieve the kind of efficiency and performance it delivers. ABLDC fan composes of 3 main components:
  1. Stator
  2. Rotor
  3. Electronics.



Permanent  
Magnets

Copper  
Windings

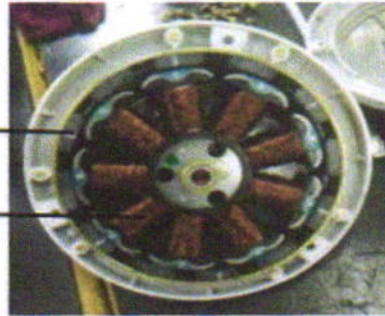
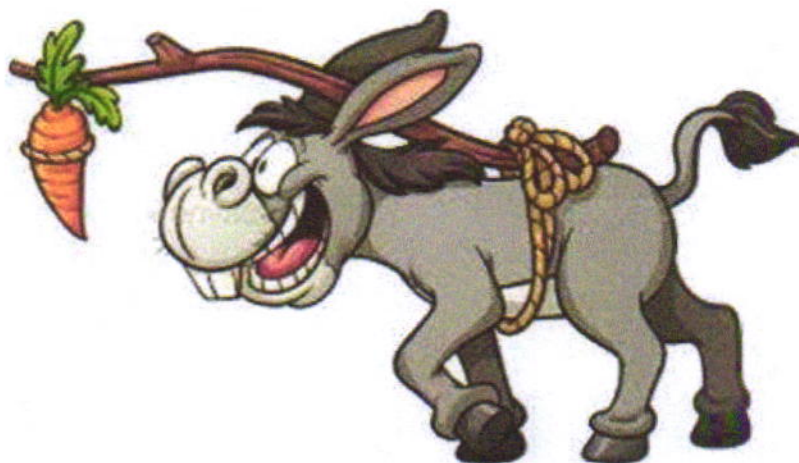


Figure2: Inside view of BLDC motor

- The electronics contains a driving algorithm which drives the BLDC motor. As discussed earlier in a BLDC motor the position of magnets in the fan is sensed by electronics that either uses a Hall Effect sensor or back EMF. Modern BLDC motors use Back EMF for commutation due to proven disadvantages of Hall Effect sensor over period of time.
- To explain it in easier terms, we can take an example of a donkey who has a carrot fixed over his head as per shown in the picture below:
- Consider the Stator to be the Carrot and the donkey to be the Magnets. The polarity of the stator will keep changing, due to attraction the Magnets will create rotational moment, just like how the donkey tries hard to reach the carrot in the picture.



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BLDC Ceiling fans are operated by remote unlike traditional regulator reducing the purchase cost of regulator.

- Compared to regular induction fan, a BLDC fan can save up to Rs1000-1500/Year/fan. And because there is no heating of the motor, the life of a BLDC fan is also expected to be much higher than ordinary fans.

### **12.6 Enhancement of Energy Efficacy of light fittings:**

Cleaning of tube-lights/bulbs to be done periodically, to remove dustcover It. It affects on lamp efficacy (lm/watt).



**General Recommendation for Energy Saving in Office Equipment**

Equipment	Wattage	Comments
CRT Monitor	100 - 120W (during operating condition)	CRT monitors consume a lot of power, much of which is wasted as heat, and represent the largest power consumption component in a typical desktop computer. Emit potentially harmful radiation. Fortunately, most CRT monitors these days are legacy equipment as new computers are generally supplied with LCD monitors. Unfortunately; most CRT monitors end up in landfill.
Desktop Computer	150W (during operating condition)	Power consumption will differ significantly depending on whether a CRT or LCD monitor is used. In home and office situations where it is necessary to run multiple desktop computers, it may be possible to make significant power savings by running a single terminal server computer with several LCD monitors and key boards attached. Terminal server computer scan also greatly simplify network management, software upgrades, etc
Photocopier	7-30W (Sl.Mode)40-300W (Standby)200-1300W (Op. condition)	Most of the energy used in a photocopiers consumed by the controllers, which are usually kept hot on stand-bay, consuming from 40-300W. Significant energy savings (40%to60%) can be made by ensuring that photocopiers are switched off at night and on weekends. Some photocopiers consume up to 30 watts even when switched off, so photocopiers should be switched off at the power outlet tone sure they are really "off".
LCD Monitor	30-50W (during operating condition)	LCD monitors typically require about 30%of the power required for a CRT monitor with the same screen area. In addition, the amount of heat generated by an LCD monitor is considerably less than a CRT monitor, resulting in a lower load on ACs. Building cooling needs may be decreased by up to 20%.

Inkjet Printer	120W (during operating condition)	Inkjet printers use relatively little power in comparison to laser printers. From an energy consumption point of view, inkjets are preferable to lasers. Unfortunately, they typically cost more to un on a cost -Per -print basis and sometimes produce less than optimum results
Laser Printer	25-80W (Standby)150-1100W (during operating condition)	Laser printers consume significant amounts of power even when in standby mode. Over the course of an 8-10hr working day, a laser printer could consume around 1kWh of energy. On the other hand, laser printers are cheaper to run on a cost-per page basis and generally produce better results. Both the number of laser printers used, and the number of hours they are operated for, should be minimized. As with printing of any kind, office procedures should be developed which minimize the need for printing to paper
Laptop Computer	15-40W (during operating condition)	Laptop computer power consumption is typically 10% to 25% of that of a desktop computer. In situations such as an office or home office, where computers may operate for 8to10hours a day, this difference is significant and could represent an energy saving of up to 1kWh per day.

**Table6: General Recommendation for Energy Saving in Office Equipment**

# AUDIT CERTIFICATE

PRESENTED TO

## **SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES**

**Karimnagar, Telangana.**

Has been assess by MQCIUL for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirements of

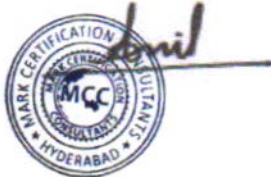
## **Green Audit**

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

Auditor Signature

Date of Audit: 15.06.2021.



MARK CERTIFICATION CONSULTANTS, 8-1-402/A/5/2, TOLICHOWKI, HYDERABAD -500008,  
TELANGANA, INDIA.

Website: [WWW.MARKCERTIFICATION.COM](http://WWW.MARKCERTIFICATION.COM)

Email: [INFO@MARKCERTIFICATION.COM](mailto:INFO@MARKCERTIFICATION.COM)

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Principal  
Sree Chaitanya Institute of Technological Sciences  
L.M.D. Colony, KARIMNAGAR



TAKSHASHILA EDUCATIONAL SOCIETY'S  
SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES  
LMD Colony, Thimmapur Village, Dist – Karimnagar,  
Telangana – 505527, India.  
(Approved by AICTE, Affiliated to JNTUH)

## Green Audit Report

2019-20

LMD COLONY, THIMMAPUR, KARIMNAGAR, T.S. - 505527

Principal  
Sree Chaitanya Institute of Technological Sciences  
L.M.D. Colony, KARIMNAGAR (T.S)

# Green Audit

- Green Campus Management and Carbon Foot print of the institute for Environmental Consciousness and Sustainability.
- Green Practices
- Students, staff using a) Bicycles b) Public Transport  
c) Pedestrian friendly roads
- Plastic-free campus
- Paperless office
- Green landscaping with trees and plants

## GREENCAMPUSMANAGEMENT

All plant and animal species - including humans - are linked together in a complex web of life; we depend upon biodiversity for our survival. Biodiversity is the key to healthy ecosystems and ultimately a healthy planet. It keeps the air and water clean, regulates our climate and provides us food, shelter, clothing, medicine and other useful products. Each part within this complex web diminishes a little when one part weakens or disappears.

Area under green cover(in sq ft or in acre)	3200 Sq. Ft.
Availability of Nursery on Campus(Yes/No)	No
Plant Protection Management	Yes
Number of plantations done in the year 2019-20	100
Extent of area(% of area)under tree cover	6%

Table26: Green Area management



College buses



The trees work hard to keep the air we breathe clean and healthy. They are like sponges. Their leaves take in much of the poisonous unwanted carbon dioxide in the air, and replace it with the oxygen we need for healthy living. This system of absorbing gases on which all plants rely for their food is called photosynthesis. In this process, the plants with the help of sunlight, water, mineral sand the green material called Chlorophyll within the leaves change the carbon-dioxide into food for themselves. When doing this they release oxygen into the air which is vital for all life on earth. At night when there is no sunlight the plant no longer makes food, so it does not release the same amount of oxygen.



### College laan

One is often told not to sleep with plants in one's room, as they will use up all the oxygen. However, at night although photosynthesis does take place the plants also rest, so that little oxygen is absorbed from the air and very little harm can be done to the ones sleeping in the room. The roots of trees dig deep into the earth and hold it together so that the rain and wind cannot wash or blow it away. This is very important as the earth has only a very thin layer (seldom more than one foot) offer tile soil covering it. If this is washed, blown or worn away leaving rock or sand on which no plants can grow then the earth would become a desert. The removal of this top-soil is called soil erosion. Scientists, all over the world are trying to find ways to prevent soil erosion. One of them optima portent ways is creating by planting more trees.

Trees send up water vapor into the atmosphere through their leaves. When this vapor meets the cool air above it turns into drops of water which then fall as rain. They give us beauty, color and greenery. This is something which we often forget and fail to appreciate. They are the homes of many birds, animals and insects. Each of these is important in maintaining the balance of nature.

## Green Audit

Green Audit defined as documented, verification process of specified environmental activities, events, conditions, management system. Green Audit can create awareness in college staff as well as students which are our responsibility too, to save our environment and also can find the ways to improve environmental issues which are increasing day by day. Environmental problems such as recycling of waste, water conservation and recycling, pollution control, plantation, biodiversity conservation etc. can solve through Green Auditing. Good growth come from good education as well as good mental and physical health if we protect our environment, we can also protect our health.



## College Building

Green Audit means of assessing environmental performance. It is a systematic documented periodic and objective review by regulated entities of facility operations and practices related to

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meeting environmental requirement. It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all emissions to air, land and water, legal constraints, the effects on the neighboring community, landscape and ecology, the public's perception of the operating company in the local area. Green audit does not stop all compliance with legislation. Nor is it a 'green washing' public relations exercise. Rather it is a total strategic approach to the organization's activities.

### **VISION**

To emerge as a leading educational institution by producing world class professionals using cutting edge technologies

### **MISSION**

To provide quality education by implementing state-of-the-art teaching-learning methods with professional values.

To continuously develop infrastructure and include high end technology for our students to have an up-to-date and intellectually inspiring environment.

To inculcate fervour for research, creativity, innovation and entrepreneurship, and to promote industry-institute interaction and collaboration.

To focus on over-all personality development of the students and staff by promoting co-and extra-curricular activities

### **College Green Committee**

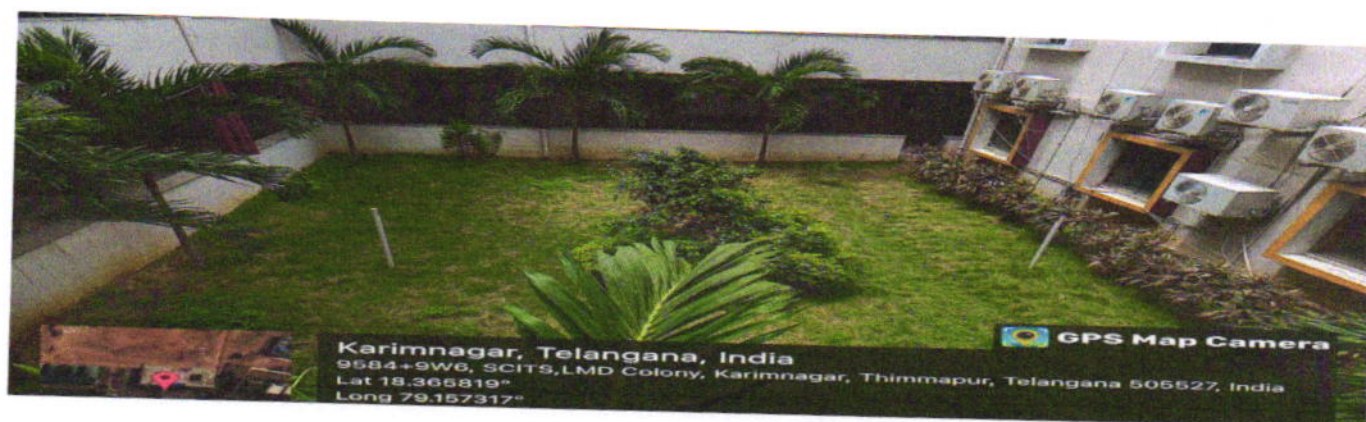
The college Green committee was established in the college with proactive attitude towards conservation of the environment and objective of generating awareness and promoting environmental care at both individual and community level. The committee aims to create as per meeting atmosphere facilitating conversation, action and feedback on environmental issues engaging faculty, students and the general public. The institution looks at the macro-environmental perspective in the college and the society and envisions nurturing the environment with a greener future.

### 11.4 Green Campus Policy of College

SCITS is committed to develop its campuses as places where education is combined with environmental friendly practices to promote Sustainable Development by o restricted entry of automobiles, promoting the use of Bicycles and provision of Pedestrian Friendly path ways emanon use of disposable Plastics in line with the State



College laan



College internal laan

Government Guidelines. Creating awareness with stakeholders on the need for maintaining greenery in the campus for sustainable ambience.

Encouraging all stakeholders to support and participate in ensuring green cover in the campus. o preserving age old trees and protect them to have prolonged life. Enhancement of green cover by landscaping with trees and plants. Conduct of green audit at regular intervals and implement the suggestions towards creating green campus. The faculty, staff and students are encouraged to contribute collectively to develop an eco-friendly sustainable campus and disseminate the concept of eco friendly culture to the nearby community and wherever possible.

SCITS envisions a clean and green university campus where ecological friendly practices and education combine to encourage sustainable and eco-friendly systems in the campus and beyond the campus. The green campus offers the organization a prospect to take the lead in redefining its green culture through promoting environmental ethics among students and staff The Institute also promotes clean and green campus through adopting, practicing and promoting environmentally friendly practices among students and staff to generate Eco consciousness among them and in the world around them.

**Objectives of the policy:** To compose students by understanding the importance of environment and its problem areas Important function of the policy.

- To train students to create responsiveness amongst public.
- To encourage students to keep environment safe and clean.
- To encourage students to adopt environment friendly practices which include paper bags, save.
- To help the students to minimize the use of polluting product.

#### **Why Green Audit**

The excessive environmental degradation is creating the “Environmental poverty”. Thus, academic leaders should initiate the knowledge and benefits of resources so that their

institutions respond to environmental issues and challenges. We believe that there is an urgent need to address these problems and reverse the trends of environment degradation.

#### **OBJECTIVES-**

- To assess environmental performance
- To promote environmental awareness
- To improve health
- To conserve resources
- To reduce waste
- To improve environmental standards
- To sustainable use of natural resources
- To develop responsibility about environment
- To enhance college profile

#### **PLANTATION-**

To create Environmental awareness at the college campus we organize plantation program with all the staffs and students of our college. We try to plant more trees. To keep the greeneries in the campus we maintain the garden by paid staff under the guidance of garden committee members.

To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, principal, and all departments faculty members. In this session vanmahotsav program was organized and about 100 or nominal, avenue, Medicinal plant with rare and exotic beautiful trees was planted in botanical garden and other parts of college campus. To keep the greeneries in the campus, we regularly maintain the gardens which are looked after by paid staff under the guidance of garden committee members. Moreover, every year we try to plant new trees. Seasonal flower garden is also a unique feature of this college. There are so many plants are present

in our college campus categorized below-

Category	Numbers(Approx.)
Herbs	30
Shrubs	20
Trees	107
Medicinal Plant	15

#### IDENTIFICATION OF PLANT SPECIES:

There are so many plant species are present at college campus. The member of the environment committee audited and identified of various plant species with the help of flora.

#### Carbon Footprint

A carbon footprint is the amount of green house gases—primarily carbon dioxide— released into the atmosphere by an individual, event, organization, service, or product, expressed as carbon dioxide equivalent. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions.

An important aspect of doing an audit is to be able to measure our impact so that we can determine better ways to manage the impact. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created.

**G)** The following activity/ utility is responsible for carbon emission:-

- Transportation
- Electricity purchased from Distribution companies.

### 11.4.4 Carbon Emission by Transportation

Principal, Administrator, teaching & non-teaching staff and students comes to college either by two wheelers & four wheelers. The two major fuels used by the transport sector are petrol and diesel. These fuels are carbon intensive as they contain 80-85% of carbon by weight.

Sl. No.	Fuel Used	Types of Transport	Persons	Numbers of Persons	A	B	C	D=C/B	E	F=E x D	G	H=G x F x A
					No. of Vehicle Used	mileage	Av. distance in KM	Fuel Consumed per Day per Vehicle in ltr	Total working days	Petrol Consumption Per Vehicle in a year	Emission factor	Total emission
1	No Fuel	Bicycle	Students	6	6		3		180			
2	Petrol	Two Wheeler	Non-Teaching Staff	1699	500	60	20	0.66	180	118.8	2.67	1585.98
			Teaching Staff	60	15	60	20	0.66	180	118.8	2.67	4757.94
			Teaching Staff	112	50	60	20	0.66	180	118.8	2.67	1585.98
3	Petrol	Four Wheeler	Teaching Staff	80	5	20	20	0.66	180	118.8	2.67	1585.98
		Auto	Students									
4	Diesel	Bus	Students	1000								
			Teaching Staff	50								
<b>Total Co2 emission in Kg Co2 eq per Year</b>												<b>130590</b>

Table1: Carbon emission by transport



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Copper  
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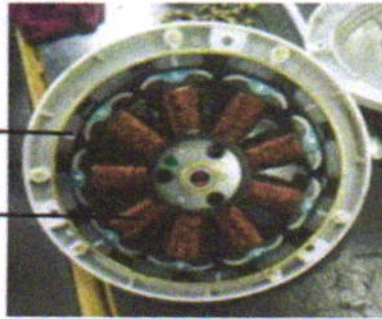


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Inkjet Printer	120W (during operating condition)	Inkjet printers use relatively little power in comparison to laser printers. From an energy consumption point of view, inkjets are preferable to lasers. Unfortunately, they typically cost more to un on a cost -Per -print basis and sometimes produce less than optimum results
Laser Printer	25-80W (Standby)150-1100W (during operating condition)	Laser printers consume significant amounts of power even when in standby mode. Over the course of an 8-10hr working day, a laser printer could consume around 1kWh of energy. On the other hand, laser printers are cheaper to run on a cost-per page basis and generally produce better results. Both the number of laser printers used, and the number of hours they are operated for, should be minimized. As with printing of any kind, office procedures should be developed which minimize the need for printing to paper
Laptop Computer	15-40W (during operating condition)	Laptop computer power consumption is typically 10% to 25% of that of a desktop computer. In situations such as an office or home office, where computers may operate for 8to10hours a day, this difference is significant and could represent an energy saving of up to 1kWh per day.

**Table6: General Recommendation for Energy Saving in Office Equipment**



# AUDIT CERTIFICATE

PRESENTED TO

## **SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES**

**Karimnagar, Telangana.**

Has been assess by MQCIUL for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirements of

## **Green Audit**

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

**Auditor Signature**

**Date of Audit: 15.06.2020.**



MARK CERTIFICATION CONSULTANTS, 8-1-402/A/5/2, TOLICHOWKI, HYDERABAD -500008,  
TELANGANA, INDIA.

Website: [WWW.MARKCERTIFICATION.COM](http://WWW.MARKCERTIFICATION.COM)  
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**Principal**  
Sree Chaitanya Institute of Technological Sciences  
L.M.D. Colony, KARIMNAGAR (T.S.)



TAKSHASHILA EDUCATIONAL SOCIETY'S  
SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES  
LMD Colony, Thimmapur Village, Dist – Karimnagar,  
Telangana – 505527, India.

(Approved by AICTE, Affiliated to JNTUH)

## Green Audit Report

**2018-2019**

**LMD COLONY, THIMMAPUR, KARIMNAGAR, T.S. - 505527**

  
Principal  
Sree Chaitanya Institute of Technological Sciences  
L.M.D. Colony, KARIMNAGAR (T.S.)

# Green Audit

- Green Campus Management and Carbon Foot print of the institute for Environmental Consciousness and Sustainability.
- Green Practices
- Students, staff using a) Bicycles b) Public Transport  
c) Pedestrian friendly roads
- Plastic-free campus
- Paperless office
- Green landscaping with trees and plants

## GREEN CAMPUS MANAGEMENT

All plant and animal species - including humans - are linked together in a complex web of life; we depend upon biodiversity for our survival. Biodiversity is the key to healthy ecosystems and ultimately a healthy planet. It keeps the air and water clean, regulates our climate and provides us food, shelter, clothing, medicine and other useful products. Each part within this complex web diminishes a little when one part weakens or disappears.

Area under green cover(in sq ft or in acre)	3200 Sq. Ft.
Availability of Nursery on Campus(Yes/No)	No
Plant Protection Management	Yes
Number of plantations done in the year 2018-19	70
Extent of area(% of area)under tree cover	5%

Table26: Green Area management



Buses

The trees work hard to keep the air we breathe clean and healthy. They are like sponges. Their leaves take in much of the poisonous unwanted carbon dioxide in the air, and replace it with the oxygen we need for healthy living. This system of absorbing gases on which all plants rely for their food is called photosynthesis. In this process, the plants with the help of sunlight, water, mineral and the green material called Chlorophyll within the leaves change the carbon-dioxide into food for themselves. When doing this they release oxygen into the air which is vital for all life on earth. At night when there is no sunlight the plant no longer makes food, so it does not release the same amount of oxygen.



### Trees

One is often told not to sleep with plants in one's room, as they will use up all the oxygen. However, at night although photosynthesis does take place the plants also rest, so that little oxygen is absorbed from the air and very little harm can be done to the ones sleeping in the room. The roots of trees dig deep into the earth and hold it together so that the rain and wind cannot wash or blow it away. This is very important as the earth has only a very thin layer (seldom more than one foot) of top soil covering it. If this is washed, blown or worn away leaving rock or sand on which no plants can grow then the earth would become a desert. The removal of this top-soil is called soil erosion. Scientists, all over the world are trying to find ways to prevent soil erosion. One of the most important ways is creating by planting more trees.

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Trees send up water vapor into the atmosphere through their leaves. When this vapor meets the cool air above it turns into drops of water which then fall as rain. They give us beauty, color and greenery. This is something which we often forget and fail to appreciate. They are the homes of many birds, animals and insects. Each of these is important in maintaining the balance of nature.

## Green Audit

Green Audit defined as documented, verification process of specified environmental activities, events, conditions, management system. Green Audit can create awareness in college staff as well as students which are our responsibility too, to save our environment and also can find the ways to improve environmental issues which are increasing day by day. Environmental problems such as recycling of waste, water conservation and recycling, pollution control, plantation, biodiversity conservation etc. can solve through Green Auditing. Good growth come from good education as well as good mental and physical health if we protect our environment, we can also protect our health.



## College Building

Green Audit means of assessing environmental performance. It is a systematic documented periodic and objective review by regulated entities of facility operations and practices related to

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meeting environmental requirement. It is otherwise the systematic examination of the interactions between any operation and its surroundings. This includes all emissions to air, land and water, legal constraints, the effects on the neighboring community, landscape and ecology, the public's perception of the operating company in the local area. Green audit does not stop all compliance with legislation. Nor is it a 'green washing' public relations exercise. Rather it is a total strategic approach to the organization's activities.

### **VISION**

To emerge as a leading educational institution by producing world class professionals using cutting edge technologies

### **MISSION**

To provide quality education by implementing state-of-the-art teaching-learning methods with professional values.

To continuously develop infrastructure and include high end technology for our students to have an up-to-date and intellectually inspiring environment.

To inculcate fervour for research, creativity, innovation and entrepreneurship, and to promote industry-institute interaction and collaboration.

To focus on over-all personality development of the students and staff by promoting co-and extra-curricular activities

### **College Green Committee**

The college Green committee was established in the college with proactive attitude towards conservation of the environment and objective of generating awareness and promoting environmental care at both individual and community level. The committee aims to create as per meeting atmosphere facilitating conversation, action and feedback on environmental issues engaging faculty, students and the general public. The institution looks at the macro-environmental perspective in the college and the society and envisions nurturing the environment with a greener future.

### **11.5 Green Campus Policy of College**

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SCITS is committed to develop its campuses as places where education is combined with environmental friendly practices to promote Sustainable Development by o restricted entry of automobiles, promoting the use of Bicycles and provision of Pedestrian Friendly path ways emanon use of disposable Plastics in line with the State



Karimnagar, Telangana, India  
9584+9W6, SCITS,LMD Colony, Karimnagar, Thimmapur, Telangana 505527, India  
Lat 18.365819°  
Long 79.157317°

Greenery



Karimnagar, Telangana, India  
9584+9W6, SCITS,LMD Colony, Karimnagar, Thimmapur, Telangana 505527, India  
Lat 18.365819°  
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Government Guidelines. Creating awareness with stakeholders on the need for maintaining greenery in the campus for sustainable ambience.

Encouraging all stakeholders to support and participate in ensuring green cover in the campus. o preserving age old trees and protect them to have prolonged life. Enhancement of green cover by landscaping with trees and plants. Conduct of green audit at regular intervals and implement the suggestions towards creating green campus. The faculty, staff and students are encouraged to contribute collectively to develop an eco-friendly sustainable campus and disseminate the concept of eco friendly culture to the nearby community and wherever possible.

SCITS envisions a clean and green university campus where ecological friendly practices and education combine to encourage sustainable and eco-friendly systems in the campus and beyond the campus. The green campus offers the organization a prospect to take the lead in redefining its green culture through promoting environmental ethics among students and staff The Institute also promotes clean and green campus through adopting, practicing and promoting environmentally friendly practices among students and staff to generate Eco consciousness among them and in the world around them.

**Objectives of the policy:** To compose students by understanding the importance of environment and its problem areas Important function of the policy.

- To train students to create responsiveness amongst public.
- To encourage students to keep environment safe and clean.
- To encourage students to adopt environment friendly practices which include paper bags, save.

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- To help the students to minimize the use of polluting product.

### **Why Green Audit**

The excessive environmental degradation is creating the “Environmental poverty”. Thus, academic leaders should initiate the knowledge and benefits of resources so that their institutions respond to environmental issues and challenges. We believe that there is an urgent need to address these problems and reverse the trends of environment degradation.

### **OBJECTIVES-**

- To assess environmental performance
- To promote environmental awareness
- To improve health
- To conserve resources
- To reduce waste
- To improve environmental standards
- To sustainable use of natural resources
- To develop responsibility about environment
- To enhance college profile

### **PLANTATION-**

To create Environmental awareness at the college campus we organize plantation program with all the staffs and students of our college. We try to plant more trees. To keep the greeneries in the campus we maintain the garden by paid staff under the guidance of garden committee members.

To create- green cover, eco-friendly atmosphere, pure oxygen at the college campus, plantation program is organized every year with involving all students, principal, and all departments faculty members. In this session vanmahotsav program was organized and about 100 or nominal, avenue,

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Medicinal plant with rare and exotic beautiful trees was planted in botanical garden and other parts of college campus. To keep the greeneries in the campus, we regularly maintain the gardens which are looked after by paid staff under the guidance of garden committee members. Moreover, every year we try to plant new trees. Seasonal flower garden is also a unique feature of this college. There are so many plants are present in our college campus categorized below-

Category	Numbers(Approx.)
Herbs	30
Shrubs	20
Trees	107
Medicinal Plant	15

**IDENTIFICATION OF PLANT SPECIES:**

There are so many plant species are present at college campus. The member of the environment committee audited and identified of various plant species with the help of flora.

## Carbon Footprint

A carbon footprint is the amount of green house gases—primarily carbon dioxide— released into the atmosphere by an individual, event, organization, service, or product, expressed as carbon dioxide equivalent. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created. The release of carbon dioxide gas into the Earth's atmosphere through human activities is commonly known as carbon emissions.

An important aspect of doing an audit is to be able to measure our impact so that we can determine better ways to manage the impact. In addition to the water, waste, energy and biodiversity audits we can also determine what our carbon footprint is, based on the amount of carbon emissions created.

**I)** The following activity/ utility is responsible for carbon emission:-

- Transportation
- Electricity purchased from Distribution companies.

  
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### 11.4.5 Carbon Emission by Transportation

Principal, Administrator, teaching & non-teaching staff and students comes to college either by two wheelers & four wheelers. The two major fuels used by the transport sector are petrol and diesel. These fuels are carbon intensive as they contain 80-85% of carbon by weight.

Sl. No.	Fuel Used	Types of Transport	Persons	Numbers of Persons	A	B	C	D=C/B	E	F=E x D	G	H=G x F x A
					Nos. of Vehicle Used	mileage	Av. distance in KM	Fuel Consumed per Day per Vehicle in ltr	Total working days	Petrol Consumption Per Vehicle in a year	Emission factor	Total emission
1	No Fuel	Bicycle	Students	5	5		3		180			
2	Petrol	Two Wheeler	Non-Teaching Staff									
			Students	1699	500	60	20	0.66	180	118.8	2.67	158598
			Non-Teaching Staff	60	15	60	20	0.66	180	118.8	2.67	4757.94
3	Petrol	Four Wheeler	Teaching Staff	112	50	60	20	0.66	180	118.8	2.67	15859.8
			Teaching Staff	80	5	20	20	0.66	180	118.8	2.67	1585.98
4	Diesel	Auto	Students									
		Bus	Students	1000								
			Teaching Staff	50								
<b>Total Co2 emission in Kg Co2 eq per Year</b>												<b>130590</b>

Table1: Carbon emission by transport

Thus, total emission by the transport is  $\text{KGCO}_2\text{eq}$ . Per year. **130590**

### Carbon Emission by Electricity

Electricity is taken by grid which uses coal for generating electricity or DG set which uses diesel for electricity generation.

Parameter	Emission Factor(A)	Unit in KWH (B)	Total emission (C=A x B)
Grid Electricity	0.82	159256	
<b>Total Kg CO<sub>2</sub>Eq. Emission by Electricity</b>			<b>130590</b>

Table2: Carbon Emission by Electricity

Thus, total emission by purchased electricity is 1, 30,590 Kg CO<sub>2</sub>Eq.

### Total Carbon dioxide emission at S C I T S

Area	CO <sub>2</sub> eq.emission in KG
Electricity	130590
Transport	180801
<b>Total</b>	<b>311391</b>

Table3: Total Carbon dioxide emission at SCITS

### Reduction of Carbon Emission

**J)** The following installation/ activity is responsible for reduction in carbon emission:-

- Composting
- Tree plantation

#### Reduction of Carbon Emission due to absorption of CO<sub>2</sub> by Tree Plantation

Planting is a great way to help sequester carbon emissions. Through photosynthesis is trees absorb carbon dioxide to produce oxygen, food and wood.

Particulars of Flora	Numbers	Carbon absorption by one tree Per year	Total Carbon Dioxide in Kg
Full grown Tree	107	6.8	727.6
Semi Grown Tree		3.4	
Quarter grown plants	30	1.7	51
<b>Total Carbon dioxide absorption by trees</b>			

Table4: Carbon absorption by tree plantation.

**Total Reduction in Carbon dioxide emission at SCITS**

Area	Reduction in CO2 eq. emission in KG
Trees	137
<b>Total</b>	<b>778.6</b>

Table5: Total Reduction in Carbon dioxide emission



Principal 95

## RECOMMENDATIONS

### 12.9 Formation of ENCON Club:

We recommend to formation of the ENCON Club in SCITS for spreading awareness on the importance of energy conservation. ENCON Club will participate in all energy conservation activities and organize program with the support of Telangana State Renewable Energy Development Agency, (TREDA) Karimnagar and Bureau of Energy Efficiency, (BEE) New Delhi.

Every year, India observes National Energy Conservation on December 14. The day is organized by the Bureau of Energy Efficiency (BEE) – which operates under the Ministry of Power, aiming to present India's stellar achievements in cost-efficient energy production and resource conservation.

ENCON Club will celebrate "Energy Conservation Day" on 14<sup>th</sup> December, each year. Further plans for the future may be discussed on this day, targeting holistic development as the main goal towards mitigation of climate change. It would not only help in imparting knowledge on energy efficiency but also in its implementation in households and institutions.

### Objective of ENCON Club

The objective of the club is to create awareness among the students, staff and teachers and equip them for efficient management of all forms of energy, top remote energy efficiency and energy conservation. The club will keen to spread "Energy Conservation Messages" in the society by conducting awareness programs to students and public.



## Technical Description

### Energy Efficient Gorilla Fan/ Super fan

Every energy efficient Gorilla/Super fan uses BLDC (Brushless Direct Current) motor. BLDC motor has no mechanical brush for commutation of the windings. Commutation is deployed with the help of smart electronics. As a result the fan runs internally at 24V and consumes just 28W at full speed.

#### Key features of BLDC design:

- Extremely low heat & associated power loss
- Better flexibility over controlling motor speed
- Smart motor tuning algorithm
- No spark and minimal electrical noise
- Sensor less design
- ABLDC fan takes in AC voltage and internally converts it into DC using SMPS.
- The main difference between BLDC and ordinary DC fans is the commutation method. A commutation is basically the technique of changing the direction of current in the motor for the rotational movement. In a BLDC motor, as there are no brushes so the commutation is done by the driving algorithm in the Electronics. The main advantage is that over a period of time, due to mechanical contact in a brushed motor the commutators can undergo wear and tear, this thing is eliminated in BLDC Motor making the motor more rugged for long-term use.



Figure1: BLDC motor of Energy Efficient fan

- To explain, BLDC technology in simpler terms, BLDC uses a combination of Permanent Magnets and Electronics to achieve the kind of efficiency and performance it delivers. ABLDC fan composes of 3 main components:
  1. Stator
  2. Rotor
  3. Electronics.

Permanent Magnets

Copper Windings

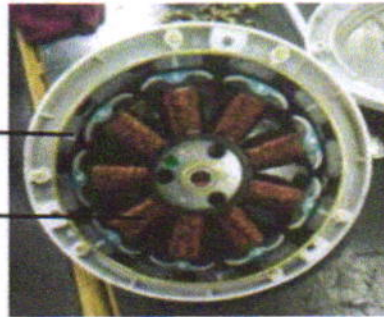


Figure2: Inside view of BLDC motor

- The electronics contains a driving algorithm which drives the BLDC motor. As discussed earlier in a BLDC motor the position of magnets in the fan is sensed by electronics that either uses a Hall Effect sensor or back EMF. Modern BLDC motors use Back EMF for commutation due to proven disadvantages of Hall Effect sensor over period of time.
- To explain it in easier terms, we can take an example of a donkey who has a carrot fixed over his head as per shown in the picture below:
- Consider the Stator to be the Carrot and the donkey to be the Magnets. The polarity of the stator will keep changing, due to attraction the Magnets will create rotational moment, just like how the donkey tries hard to reach the carrot in the picture.



2

- Permanent magnets used in rotor are responsible for mass reduction in power consumption compared to windings used in the stator in an ordinary induction fan. One added advantage in a BLDC fans due to use of an electronic circuit is that you can add several additional features increase convenience, few example of the same are sleep mode, timer mode also it is compatible with Home automation systems. Most of the

BLDC Ceiling fans are operated by remote unlike traditional regulator reducing the purchase cost of regulator.

- Compared to regular induction fan, a BLDC fan can save up to Rs1000-1500/Year/fan. And because there is no heating of the motor, the life of a BLDC fan is also expected to be much higher than ordinary fans.

### **12.10 Enhancement of Energy Efficacy of light fittings:**

Cleaning of tube-lights/bulbs to be done periodically, to remove dustcover It. It affects on lamp efficacy (lm/watt).



**General Recommendation for Energy Saving in Office Equipment**

Equipment	Wattage	Comments
CRT Monitor	100 - 120W (during operating condition)	CRT monitors consume a lot of power, much of which is wasted as heat, and represent the largest power consumption component in a typical desktop computer. Emit potentially harmful radiation. Fortunately, most CRT monitors these days are legacy equipment as new computers are generally supplied with LCD monitors. Unfortunately; most CRT monitors end up in landfill.
Desktop Computer	150W (during operating condition)	Power consumption will differ significantly depending on whether a CRT or LCD monitor is used. In home and office situations where it is necessary to run multiple desktop computers, it may be possible to make significant power savings by running a single terminal server computer with several LCD monitors and key boards attached. Terminal server computer scan also greatly simplify network management, software upgrades, etc
Photocopier	7-30W (Sl.Mode)40-300W (Standby)200-1300W (Op. condition)	Most of the energy used in a photocopiers consumed by the controllers, which are usually kept hot on stand-bay, consuming from 40-300W. Significant energy savings (40%to60%) can be made by ensuring that photocopiers are switched off at night and on weekends. Some photocopiers consume up to 30 watts even when switched off, so photocopiers should be switched off at the power outlet tone sure they are really "off".
LCD Monitor	30-50W (during operating condition)	LCD monitors typically require about 30%of the power required for a CRT monitor with the same screen area. In addition, the amount of heat generated by an LCD monitor is considerably less than a CRT monitor, resulting in a lower load on ACs. Building cooling needs may be decreased by up to 20%.

Inkjet Printer	120W (during operating condition)	Inkjet printers use relatively little power in comparison to laser printers. From an energy consumption point of view, inkjets are preferable to lasers. Unfortunately, they typically cost more to un on a cost -Per -print basis and sometimes produce less than optimum results
Laser Printer	25-80W (Standby)150-1100W (during operating condition)	Laser printers consume significant amounts of power even when in standby mode. Over the course of an 8-10hr working day, a laser printer could consume around 1kWh of energy. On the other hand, laser printers are cheaper to run on a cost-per page basis and generally produce better results. Both the number of laser printers used, and the number of hours they are operated for, should be minimized. As with printing of any kind, office procedures should be developed which minimize the need for printing to paper
Laptop Computer	15-40W (during operating condition)	Laptop computer power consumption is typically 10% to 25% of that of a desktop computer. In situations such as an office or home office, where computers may operate for 8to10hours a day, this difference is significant and could represent an energy saving of up to 1kWh per day.

**Table6: General Recommendation for Energy Saving in Office Equipment**

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**Karimnagar, Telangana.**

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## **Green Audit**

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The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

Auditor Signature

Date of Audit: 18.06.2019.




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**KVQA CERTIFICATION SERVICES PVT.LTD**  
I-25, THIRD FLOOR, MAHARANI BAGH NEW DELHI 110065, India  
Phone: +91-11-22711940

**E-mail: delhi@kvqaindia.com**

## Tax Invoice

To,

SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES  
LMD COLONY, THIMMAPUR, Karimnagar, 505527.

GST NO:- NA

Invoice No- 1355/2022-23

Dated: 05.06.2023

S.NO.	Description	Amount (INR)
	Fee for ISO 9001:2015	26271.00
	SGST@9%	-
	CGST@9%	-
	IGST@18%	4729.00
	<b>Grand Total</b>	<b>31000.00</b>

For and behalf of **KVQA Certification Services Pvt. Ltd**  
PAN No.: AADCK8876E  
GST No:-07AADCK8876E1Z7  
SAC Code-9982

KVQA Certification Services Pvt. Ltd.  
Account no. 50200017428944  
IFSC code:- HDFC0000394  
HDFC BANK SECTOR- 63, noida. U P  
Swift Code-HDFCINBBXXX

**Principal**  
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# KVQA CERTIFICATION SERVICES PVT.LTD

I-25, THIRD FLOOR, MAHARANI BAGH NEW DELHI 110065, India

Phone: +91-11-22711940

E-mail: delhi@kvqaindia.com

## Tax Invoice

To,

SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES  
LMD COLONY, THIMMAPUR, Karimnagar, 505527.

GST NO:- NA

Invoice No- 1254/2021-22

Dated: 05.05.2022

S.NO.	Description	Amount (INR)
	Fee for ISO 9001:2015	25422.00
	SGST@9%	-
	CGST@9%	-
	IGST@18%	4575.00
	<b>Grand Total</b>	<b>30000.00</b>

For and behalf of **KVQA Certification Services Pvt. Ltd**

PAN No.: AADCK8876E

GST No:-07AADCK8876E1Z7

SAC Code-9982

KVQA Certification Services Pvt. Ltd.  
Account no. 50200017428944  
IFSC code:- HDFC0000394  
HDFC BANK SECTOR- 63, noida. U P  
Swift Code-HDFCINBBXXX

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Sree Chaitanya Institute of Technological Sciences  
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## Tax Invoice

To,

SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES  
LMD COLONY, THIMMAPUR, Karimnagar, 505527.

GST NO:- NA

Invoice No- 1167/2020-21

Dated: 17.05.2021

S.NO.	Description	Amount (INR)
	Fee for ISO 9001:2015	25422.00
	SGST@9%	-
	CGST@9%	-
	IGST@18%	4575.00
	<b>Grand Total</b>	<b>30000.00</b>

For and behalf of **KVQA Certification Services Pvt. Ltd**  
PAN No.: AADCK8876E  
GST No:-07AADCK8876E1Z7  
SAC Code-9982

KVQA Certification Services Pvt. Ltd.  
Account no. 50200017428944  
IFSC code:- HDFC0000394  
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Swift Code-HDFCINBBXXX

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E-mail: delhi@kvqaindia.com

## Tax Invoice

To,

SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES  
LMD COLONY, THIMMAPUR, Karimnagar, 505527.

GST NO:- NA

Invoice No- 1043/2019-20

Dated: 05.06.2020

S.NO.	Description	Amount (INR)
	Fee for ISO 9001:2015	25422.00
	SGST@9%	-
	CGST@9%	-
	IGST@18%	4575.00
	<b>Grand Total</b>	<b>30000.00</b>

For and behalf of **KVQA Certification Services Pvt. Ltd**  
PAN No.: AADCK8876E  
GST No:-07AADCK8876E1Z7  
SAC Code-9982

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I-25, THIRD FLOOR, MAHARANI BAGH NEW DELHI 110065, India  
Phone: +91-11-22711940

E-mail: delhi@kvqaindia.com

## Tax Invoice

To,

SREE CHAITANYA INSTITUTE OF TECHNOLOGICAL SCIENCES  
LMD COLONY, THIMMAPUR, Karimnagar, 505527.

GST NO:- NA

Invoice No- 1011/2018-19

Dated: 24.05.2019

S.NO.	Description	Amount (INR)
	Fee for ISO 9001:2015	25422.00
	SGST@9%	-
	CGST@9%	-
	IGST@18%	4575.00
	<b>Grand Total</b>	<b>30000.00</b>

For and behalf of **KVQA Certification Services Pvt. Ltd**  
PAN No.: AADCK8876E  
GST No:-07AADCK8876E1Z7  
SAC Code-9982

KVQA Certification Services Pvt. Ltd.  
Account no. 50200017428944  
IFSC code:- HDFC0000394  
HDFC BANK SECTOR- 63, noida. U P  
Swift Code-HDFCINBBXXX

Principal  
Sree Chaitanya Institute of Technological Sciences  
L.M.D. Colony, KARIMNAGAR (T.S.)



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1<sup>st</sup> Surveillance Done On: 17/06/2021

2<sup>nd</sup> Surveillance Done On: 21/06/2022

Certificate No: KDCKO202007141

Date Of Issue: 05, July, 2020

Valid Until: 04, July, 2023\*



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2<sup>nd</sup> Surveillance Done On: 24/06/2019

Certificate No: KDCKO201707101

Date Of Issue: 05, July, 2017  
Valid Until: 04, July, 2020\*



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
Providing Technical and Managerial Educational Services leading to the Award of Bachelor of Technology (B.Tech) in Civil Engineering (CE), Computer Science and Engineering (CSE), Electronics and Communication Engineering (ECE), Electrical and Electronics Engineering (EEE), Master of Business Administration (MBA).

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