



# M.I.E.T. ENGINEERING COLLEGE

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
UG - CSE, EEE & MECH Programs Accredited by NBA, New Delhi.  
(An ISO 9001:2015 Certified Institution)  
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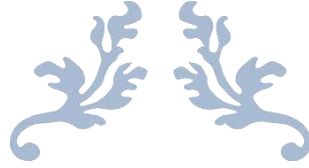
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## 7.1.6 Quality audits on environment and energy are regularly undertaken by the institution

### Index

S.No.	Description	Page No.
1.	Green Audit Report	2-24
2.	Environment Audit Report	25-34
3.	Energy Report	35-50

  
PRINCIPAL  
M.I.E.T. ENGINEERING COLLEGE  
GUNDUR, TIRUCHIRAPPALLI-620 007.



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# GREEN AUDIT REPORT

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M.I.E.T ENGINEERING COLLEGE

**Trichy-Pudukottai Road, Gundur Trichy-620007**



05 June – 06 June 2019

**IGNITE ENGINEERING**

Chennai

## TABLE OF CONTENTS

Topic	Page No.
Executive Summary	1
Introduction	1
About the College	2
Objectives of the study	3
Benefits of Green Audit	4
Methodology	4
Observation and Recommendations	5
Water Use	5
Energy Management	7
Waste Management	10
E Waste Management	14
Green Area Management	16
Environmental Monitoring	22
Conclusions	26
Acknowledgement	27
Annexure- I	28
Annexure-II	29
Annexure-III	30

## Executive Summary

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The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will pave way for sustainable development.

M.I.E.T Engineering College believes that there is an urgent need to address these fundamental environmental problems and reverse the trends. The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution.

It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, and Alternative Energy. With this in mind, the specific objectives of the audit was to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the Departments are in compliance with the applicable regulations, policies and standards. It can make a tremendous impact on student health and learning college operational costs and the environment. The criteria, methods and recommendations used in the audit were based on the identified risks.

## Introduction

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Green audit was initiated with the beginning of 1970s with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. It is known as the systematic identification, quantification, recording, reporting and analysis of components of environmental diversity.

It is the duty of organizations to carry out the Green Audits of their ongoing processes for various reasons such as; to make sure whether they are performing in accordance with relevant rules and regulations, to improve the procedures and ability of materials, to analyze the potential duties and to determine a way which can lower the cost and add to the revenue.

## Green Audit Report - 2019 M.I.E.T Engineering College, Trichy

Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade a, Grade B or Grade C according to the scores assigned at the time of accreditation. The intention of organizing Green Audit is to upgrade the environment condition in and around the institutes, colleges, companies and other organizations. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environmental friendly institute.

## About the College

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M.I.E.T Engineering College is a Self Financing Muslim Minority Institution college affiliated to Anna University and accredited with **NBA** with ISO 9001 – 2015 Certification for Quality Management Systems It has been recognized as a premier institution of higher learning for job-oriented courses.



The campus is spread over an area of More than 10 acres of land and is Green campus situated in Trichy - Pudukkottai Main Road The college offers 5 Under Graduate Courses and 5 Post Graduate courses and research Programs In Few disciplines There are More than 1600 students and 150 teaching faculty in the college which is promising to grow rapidly.

The College offers job-oriented courses, extra-curricular activities and technologically advanced facilities accessible to the faculty, the students and the support staff. Here, each individual is encouraged to step beyond the confines of academic and administrative disciplines to explore and intervene in the larger interests of the community that thrives on participation and the desire to venture into newer vistas.

## Objectives of the Study

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The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out Green Audit are:

- To introduce and aware students to real concerns of environment and its Sustainability.
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use of the campus.
- To establish a baseline data to assess future sustainability by avoiding the Interruptions in environment that are more difficult to handle and their corrections requiring high cost.
- To bring out a status report on environmental compliance.



## Benefits of green audit

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- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the college.
- Impart environmental education through systematic environmental Management approach and Improving environmental standards
- To create a green campus.
- To enable waste management through reduction of waste generation, solid- waste and water recycling.

## Methodology

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In order to perform green audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summarize the present status of environment management in the campus:

- Water management
- Energy Conservation
- Waste management
- E-waste management
- Green area management
- Environment Monitoring

## Observations and Recommendations

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### Water Use

The study observed that the main source of water for the institute is received from two bore wells. Water is used for drinking purpose, toilets and gardening. The waste water from the RO water purifier is used for gardening purpose. During the survey, no loss of water is observed, neither by any leakages, or by over flow of water from overhead tanks. The data collected from all the departments is examined and verified. On an average the total use of water in the college is 30000L/day, which include 15,000 L/day for domestic, 3,000 L/day for gardening purposes and 12,000 L/day for drinking purpose.



*Bore well*



## Green Audit Report - 2019 M.I.E.T Engineering College, Trichy

Rain water harvesting units are also functional for recharging ground water level. There are soaking pits available widespread all over the campus.



Soak pit

### Recommendations

- There is a need for monitoring and controlling overflow and periodically supervision drills should be arranged.
- Minimize wastage of water and use of electricity during the reverse osmosis process and ensure that the equipment used are regularly serviced and in good condition.

## Green Audit Report - 2019

### M.I.E.T Engineering College,Trichy

- The cleaning products used by staff should have a minimal detrimental impact on the environment. They should be biodegradable and non-toxic.
- Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. they are biodegradable and non-toxic, even where this exceeds the Control of Substances Hazardous to Health (COSHH) regulations.
- Gardens should be watered by using drip/sprinkler irrigation system to minimize water use.

## Energy Management

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. The study carried out also analyzed the use of alternate energy resources that are eco-friendly.

## Observations

The source of energy for all the buildings within the campus is through electricity only. The institution consumes about **140kW/day**. However **1000Watts** of the daily electricity requirement is supplied from **solar energy**.

The campus contains Lights and fans in use. The entire campus including common facility centers are equipped with LED lamps and LED tube lights, except at few locations. Besides this, photovoltaic cells are also installed in the campus as an alternate renewable source of energy.

Computers are set to automatic power saving mode when not in use. Solar water heaters are installed in hostel buildings and staff quarters as to promote renewable energy. Also, campus administration runs switch-off drill on regular basis. Equipment like Computers is used in power saving mode.





**Solar street Lights**

A Plenty Of Solar Based Street lights are Installed in around the Colleges to promote alternate Energy resources.

**Advantages of LED Solar Street Lighting Projects**

1. Lower power consumption
2. Higher power, higher intensity
3. Save all your electricity cost. Save electric transformer and cable cost. Free maintenance
4. Environmental Impact - Eliminate Hazardous Disposal
5. Longer lifetime: Lifespan of solar panel is 20-25 years. Lifespan of LED street lights is 6-8 years. Lifespan of battery is 4-6 years.



Solar Based Street Lights around College

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**M.I.E.T Engineering College,Trichy**

***Energy Rating***

After the complete survey and analysis of the campus as per ISO 50001:2018 Energy Management System Standards, we rate the campus Score 4/5.

**Recommendations**

- The management should support more of renewable and carbon-neutral electricity options on any energy- purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.
- More LED lights should be installed to reduce power consumed for lighting.
- The campus administration should run switch-off drill on regular basis.
- In campus premises electricity should be shut down from main building supply after occupancy time, to prevent power loss due to eddy current.
- 5-star rated Air Conditioners, Fans and CFLs should be used.
- Cleaning of tube-lights/bulbs to be done periodically, to remove dust over it

**Waste Management**

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. Furthermore, solid waste often includes wasted material resources that could otherwise be channeled into better service through recycling, repair, and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus.



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**M.I.E.T Engineering College,Trichy**

**Observations**

**Liquid waste management**

A mini **water treatment plant** is available within the campus. The waste water from domestic usage (grey water) is recycled and used for gardening. This is one of the greening initiatives taken by the management.

They have a Central **RO unit** installed in the Campus for Capacity of **2000Ltrs/Day** which easily accessible to students.



*RO SYSTEM INSTALLED IN CAMPUS*



*Purified Water Unit Installed In all Blocks*

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**M.I.E.T Engineering College,Trichy**

**Solid waste management**

Waste generated from tree droppings and lawn management is major solid waste generated in the campus. Separate dustbins are provided for Bio-degradable and Plastic waste in order to segregate them at the source itself. Single sided used papers are reused for writing and printing in all the departments to minimize the usage of papers. Important and confidential reports/ papers are sent for pulping and recycling after completion of their preservation period.

Chemical waste generated in laboratories that are potentially hazardous are segregated. Very less plastic waste (0.1Kg/day) is generated by some departments, office, garden etc Metal waste and wooden waste is stored and sent to authorized scrap agents for further processing. Glass bottles are reused in the laboratories.

The college has separate bins to collect biodegradable and non-biodegradable waste generated in the campus.



*Proper waste management Practices are followed in campus*



Separate bins Degradable & Bio Degradable Waste

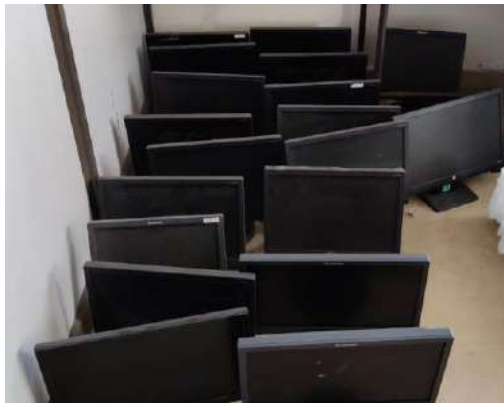
## **Recommendations**

- The amount of waste generated from classrooms and staff rooms can be minimized.
- Full use of all recycling facilities provided by City Municipality and private suppliers can be utilized for waste disposal.
- Sufficient, accessible and well-publicized collection points can be made available for recyclable waste, with responsibility for recycling clearly allocated.



### **E-waste Management**

E-waste is a consumer and business electronic equipment that is near or at the end of its useful life. This waste makes up about 5% of all municipal solid waste worldwide. It is hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.



**E Waste Materials are Properly Stored in Store**



### **Observations**

E-waste generated in the campus is of minimal quantity. It is being effectively managed, keeping in mind the environmental hazards that may arise if not disposed properly.

The cartridges of laser printers are refilled outside the college campus. Administration Awareness programmes are being conducted regarding E-waste Management in various departments. The E- wastes and defective items from computer laboratories are being stored properly.

The dismantled hardware of personal computers are used in PC trouble shooting lab. This is put to use to conduct practical courses for B.E (Computer Science). The dismantled electronic spare parts are immediately sold for reuse. The minimal amount of e-waste that is generated taken by external vendor with Proper MOU.

### **Recommendations**

- Use reusable resources and containers and avoid unnecessary packaging wherever possible.
- The management should take an initiative to purchase recycled resources when they are available.
- Recycle or safely dispose of white goods, computers and electrical appliances.



### **Green Area Management**

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps in ensuring that the Environmental Policy enacted, enforced and reviewed using various environmental awareness programmes.

### **Observations**

Campus is located in the vicinity of many trees (species) to maintain the biodiversity. Various tree plantation programs are being organized at college campus and surrounding villages through NSS (National Service Scheme) unit. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes various type of indigenous species of ornamental and medicinal wild plant species.

The college cultivates vegetables for its own use through organic farming initiatives.



**Organic farming**

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**M.I.E.T Engineering College,Trichy**



Organic cultivation



Student involvement in green area management



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Ornamental plants



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**M.I.E.T Engineering College,Trichy**



*Tree plantation on world environment day Celebrations*

**Use of Bicycles:**

The Non teaching staff residing in and around the campus commutes to college by bicycles. The college has constructed one cycle shed for such employees to safeguard their vehicles. This also motivates the staff to come to the college by bicycle.

**Public transport:**

All the students make use of the college bus facility provide by the college. Approximately 90% students and 80% of staff use the college bus. The students do not use personal transport to attend the college. This transport pooling is a greening initiative by college to avoid environmental pollution.

**Mud Roads:**

All the roads in college are natural mud road allowing rainwater to seep through easily. This enables the easy recharge of ground water.

**Plastic free campus**

The usage of plastics in college is minimal. The staff and the students are not encouraged to use impermissible size plastic bags throughout the campus.

**Paperless office**

The college administration follows paperless office system. The President office, the principal office, all the Departments of the college, controller of examination office, and laboratories are very well connected with a good and efficient LAN network. Hence all the inter office correspondence is done through email. This reduces the use of papers.



### **Recommendations**

- Review periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Assign scientific names to the trees.
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service.
- Create awareness of environmental sustainability and take actions to ensure environmental sustainability.
- Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The
- Environmental Committee shall be the source of advice and guidance to staff and students on how to implement this Policy.
- Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.
- Indoor plantation to inculcate interest in students, Bonsai can planted in corridor to bond a relation with nature.
- Green library should be established.
- Establish Herbal Garden inside the college campus.

## Environmental Monitoring

As part of green audit of campus, the Green Audit Assessment Team has carried out the environmental monitoring of campus. This includes Illumination, Noise level, ventilation and indoor Air quality of the class rooms. It was observed that Illumination and Ventilation is adequate considering natural light and air velocity present. Noise level in the campus is well below the limit.

The following surveys were conducted:

1. Ambient Air Quality monitoring – Annexure 1
2. Lux monitoring – Annexure 2
3. Noise Monitoring-Annexure 3

**Ambient Air Quality Monitoring**

Ambient air quality monitoring can help in providing a strategic solution towards air purification and help lead a safer life. Also, air quality monitoring in the school campus not only develops trust among the parents but ensures that the administration cares about their Students and Staff



***Ambient Air Quality monitoring at Campus***

**Lux Monitoring**

Illumination is one of the most important environmental factors in the classroom. Many Doctors have discovered that lighting settings have significant impact on students' performance. so Lux monitoring can help in providing a Comfort Vision Environment to Students.



*Illumination monitoring at Campus*



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**M.I.E.T Engineering College,Trichy**

**Noise Monitoring**

When assessing noise exposure in campus environments, it can be difficult to determine whether the level of sound has reached a point where it interferes with student learning and staff productivity, or worse, becomes a threat to their health and well-being.



*Noise monitoring at Campus*

## Conclusion

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Though the institution is predominantly an Engineering college, there is significant environmental research both by faculty and students. The environmental awareness initiatives taken by the management are substantial. The installation of solar system, paperless work system and organic farming practices are remarkable. Besides, environmental awareness programmes initiated by the administration prove the campus is going green. Few recommendations are added for waste management and waste reduction using alternate eco-friendly and scientific techniques. This may lead to the prosperous future in context of Green Campus and thus aid in a sustainable environment and community development.

## **Acknowledgement**

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We are grateful to the management and committee members M.I.E.T Engineering College to award this prestigious project on green auditing. Further we sincerely thank the college staff for providing us the necessary facilities and co-operation during the audit. This ample co-operation helped us a lot in making this audit possible and successful.

**FOR IGNITE ENGINEERING**



**ER.P.VIVEK M.E**



**LEED GREEN ASSOCIATE**

**CHARTERED ENGINEER**



# IGNITE ENVIRONMENTAL SERVICES

An ISO 9001:2015 Certified Organization

Environmental Testing & Analysis, Calibration of Instruments

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Regional Office : Pondicherry, Coimbatore & Andra Pradesh

Contact : 8778740104, 9384381615 | Email : igniteengg@gmail.com



9001:2015



## AMBIENT AIR MONITORING

<b>Report No</b>	IES-NO-AR-72-63-2019	<b>Report Date:</b>	11-06-2019
<b>Customer Name &amp; Address</b>  M/s. M.I.E.T. Engineering College Trichy-Pudukottai Main Road, Guntur, Tiruchirappalli – 626007.	<b>Sample Reference No:</b>	IES-NO-AR-72-56-2019	
	<b>Sample Description:</b>	Ambient Air	
	<b>Sample Drawn by:</b>	Laboratory	
	<b>Sample Collected Date:</b>	05.06.2019	
	<b>Qty of sample Received:</b>	Filter Paper(2nos) & Approx 25ml Solution(4nos)	
	<b>Sample Received On:</b>	05.06.2019	
	<b>Test Commenced On:</b>	06.06.2019	
	<b>Test Completed On:</b>	10.06.2019	
	<b>Sampling Method:</b>	IES-SOP-ARS-01 to 11	
	<b>Sample Mark:</b>	Entrance of C-Block	

S.No	Name of the Test	Test Method	Units	Results	Max. Annual Average Limits of NAAQs
1.	Ammonia (as NH <sub>3</sub> )	CPCB Guidelines, Volume I, NAAQMS/36/2012-13	µg/m <sup>3</sup>	<5.0	100
2.	Arsenic (as As)	CPCB Guidelines, Volume I, NAAQMS/36/2012-13	ng/m <sup>3</sup>	<0.1	6.0
3.	Benzene (as C <sub>6</sub> H <sub>6</sub> )	IS 5182 (Part 11): 2006 (Reaffirmed 2017)	µg/m <sup>3</sup>	<0.5	5.0
4.	Benzo [α] Pyrene (as C <sub>20</sub> H <sub>12</sub> )	CPCB Guidelines, Volume I, NAAQMS/36/2012-13	ng/m <sup>3</sup>	<0.5	1.0
5.	Carbon Monoxide (as CO)	Instruments Manual Based SOP No.EL-SOP-ARS-17	mg/m <sup>3</sup>	<1.2	2.0
6.	Lead (as Pb)	IS 5182 (Part 22) : 2004 (Reaffirmed 2014) Clause No.5	µg/m <sup>3</sup>	<0.5	0.5
7.	Nickel (as Ni)	CPCB Guidelines, Volume I, NAAQMS/36/2012-13	ng/m <sup>3</sup>	<1.0	20
8.	Oxidants (as Ozone O <sub>3</sub> )	IS : 5182 (Part IX) - 1974 (Reaffirmed 2014)	µg/m <sup>3</sup>	<10.0	100
9.	Oxides of Nitrogen (as NO <sub>2</sub> )	IS 5182 (Part 6) : 2006 (Reaffirmed 2017)	µg/m <sup>3</sup>	20.1	40
10.	Particulate Matter (as PM <sub>10</sub> )	IS 5182 (Part 23) : 2006 (Reaffirmed 2017)	µg/m <sup>3</sup>	40.1	60
11.	Particulate Matter (as PM <sub>2.5</sub> )	EPA 40 CFR Part 50 – Appendix L	µg/m <sup>3</sup>	19.5	40
12.	Sulphur Dioxide (as SO <sub>2</sub> )	IS 5182 (Part 2) : 2001 (Reaffirmed 2017)	µg/m <sup>3</sup>	8.9	50

←-----END OF REPORT----->

**NOTES:**

The Concentrations of the parameters tested in the above Location are within the prescribed annual average limits of NAAQs tolerance limits.

Report Confirmed by



FOR IGNITE ENVIRONMENTAL SERVICES

Authorized Signatory



## AMBIENT AIR MONITORING

<b>Report No</b>	IES-NO-AR-72-64-2019	<b>Report Date:</b>	11-06-2019
<b>Customer Name &amp; Address</b>  M/s. M.I.E.T. Engineering College Trichy-Pudukottai Main Road, Guntur, Tiruchirappalli – 626007.	<b>Sample Reference No:</b>	IES-NO-AR-72-56-2019	
	<b>Sample Description:</b>	Ambient Air	
	<b>Sample Drawn by:</b>	Laboratory	
	<b>Sample Collected Date:</b>	05.06.2019	
	<b>Qty of sample Received:</b>	Filter Paper(2nos) & Approx 25ml Solution(4nos)	
	<b>Sample Received On:</b>	05.06.2019	
	<b>Test Commenced On:</b>	06.06.2019	
	<b>Test Completed On:</b>	10.06.2019	
	<b>Sampling Method:</b>	IES-SOP-ARS-01 to 11	
	<b>Sample Mark:</b>	Entrance of A-Block	

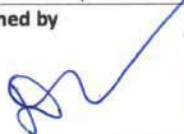
S.No	Name of the Test	Test Method	Units	Results	Max. Annual Average Limits Of NAAQs
1.	Ammonia (as NH <sub>3</sub> )	CPCB Guidelines, Volume I, NAAQMS/36/2012-13	µg/m <sup>3</sup>	<5.0	100
2.	Arsenic (as As)	CPCB Guidelines, Volume I, NAAQMS/36/2012-13	ng/m <sup>3</sup>	<0.1	6.0
3.	Benzene (as C <sub>6</sub> H <sub>6</sub> )	IS 5182 (Part 11): 2006 (Reaffirmed 2017)	µg/m <sup>3</sup>	<0.5	5.0
4.	Benzo [α] Pyrene (as C <sub>20</sub> H <sub>12</sub> )	CPCB Guidelines, Volume I, NAAQMS/36/2012-13	ng/m <sup>3</sup>	<0.5	1.0
5.	Carbon Monoxide (as CO)	Instruments Manual Based SOP No.EL-SOP-ARS-17	mg/m <sup>3</sup>	<1.2	2.0
6.	Lead (as Pb)	IS 5182 (Part 22) : 2004 (Reaffirmed 2014) Clause No.5	µg/m <sup>3</sup>	<0.5	0.5
7.	Nickel (as Ni)	CPCB Guidelines, Volume I, NAAQMS/36/2012-13	ng/m <sup>3</sup>	<1.0	20
8.	Oxidants (as Ozone O <sub>3</sub> )	IS : 5182 (Part IX) - 1974 (Reaffirmed 2014)	µg/m <sup>3</sup>	<10.0	100
9.	Oxides of Nitrogen (as NO <sub>2</sub> )	IS 5182 (Part 6) : 2006 (Reaffirmed 2017)	µg/m <sup>3</sup>	14.5	40
10.	Particulate Matter (as PM <sub>10</sub> )	IS 5182 (Part 23) : 2006 (Reaffirmed 2017)	µg/m <sup>3</sup>	46.5	60
11.	Particulate Matter (as PM <sub>2.5</sub> )	EPA 40 CFR Part 50 – Appendix L	µg/m <sup>3</sup>	23.7	40
12.	Sulphur Dioxide (as SO <sub>2</sub> )	IS 5182 (Part 2) : 2001 (Reaffirmed 2017)	µg/m <sup>3</sup>	7.3	50

-----END OF REPORT----->

**NOTES:**

The Concentrations of the parameters tested in the above Location are within the prescribed annual average limits of NAAQs tolerance limits.

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## ILLUMINATION MONITORING

<b>Report No</b>	IES-NO-IN-53-11-2019	<b>Report Date:</b>	11.06.2019			
<b>Customer Name &amp; Address</b>		<b>Sample of Reference No:</b>	IES-NO-IN-23-11-2019			
M/s. M.I.E.T. Engineering College		<b>Sample Description:</b>	Light			
Trichy-Pudukottai Main Road,		<b>Monitoring By:</b>	Laboratory			
Guntur, Tiruchirappalli – 626007		<b>Monitoring Date:</b>	06.06.2019			
		<b>Data Received On:</b>	06.06.2019			
		<b>Sampling Method:</b>	IS 3646 (part1):1992 (Reaffirmed 2003)			
		<b>Monitoring unit:</b>	Lux			
S.no	Name of the Location	Monitoring Distance in m	Monitoring Time	Day Time (6.00 a.m -10.00 p.m)		
				Minimum	Maximum	Average
1.	Admin Office	0.9	2.00PM-3.00PM	114	199	157
2.	Communication Lab	0.9	2.00PM-3.00PM	219	256	238
3.	CSE Lecture Hall-5	0.9	2.00PM-3.00PM	136	216	176
4.	EEE Dept Lecture Hall-1	0.9	2.00PM-3.00PM	176	216	196
5.	Electrical Machine Lab	0.9	2.00PM-3.00PM	191	271	231
6.	HOD room	0.9	2.00PM-3.00PM	236	266	251
7.	Library	0.9	2.00PM-3.00PM	221	247	234
8.	Near Principal Room	0.9	2.00PM-3.00PM	231	241	236
9.	R&D Lab	0.9	2.00PM-3.00PM	201	213	207
10.	Seminar Hall	0.9	2.00PM-3.00PM	314	371	343
Permissible Limit For Light as Per The Factories Rules, 1950				Maximum 65		

←-----End of Report----->

**NOTES:**

The above Location Light levels are fulfill the necessities of Factories Rules 1950 standard.

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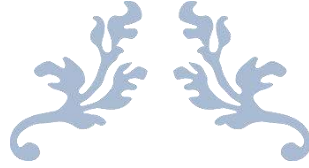


Authorized Signatory



## NOISE MONITORING

<b>Report No</b>	<b>IES-NO-NE-88-11-2019</b>	<b>Report Date:</b>	<b>11.06.2019</b>			
Customer Name & Address <b>M/s. M.I.E.T. Engineering College</b> Trichy-Pudukottai Main Road, Guntur, Tiruchirappalli – 626007		<b>Sample of Reference No:</b>	IES-NO-NE-68-11-2019			
		<b>Sample Description:</b>	Sound			
		<b>Monitoring By:</b>	Laboratory			
		<b>Monitoring Date:</b>	06.06.2019			
		<b>Data received On:</b>	06.06.2019			
		<b>Sampling Method:</b>	IS:9989- 1981 (Reaffirmed 2001)			
		<b>Monitoring unit:</b>	Db (A)			
S.no	Name of the Location	Monitoring Distance in m	Monitoring Time	Day Time (6.00 a.m -10.00 p.m)		
				Minimum	Maximum	L Equivalent
1.	Admin Office	Site	2.00PM-3.00PM	62.6	65.9	62.9
2.	Communication Lab	Site	2.00PM-3.00PM	61.1	66.7	63.7
3.	CSE Lecture Hall-5	Site	2.00PM-3.00PM	63.1	66.8	63.8
4.	EEE Dept Lecture Hall-1	Site	2.00PM-3.00PM	59.6	64.6	61.6
5.	Electrical Machine Lab	Site	2.00PM-3.00PM	60.7	64.6	61.6
6.	HOD room	Site	2.00PM-3.00PM	66.1	69.7	66.7
7.	Library	Site	2.00PM-3.00PM	52.6	60.1	57.1
8.	Near Principal Room	Site	2.00PM-3.00PM	59.1	63.7	60.7
9.	R&D Lab	Site	2.00PM-3.00PM	55.7	61.9	58.9
10.	Seminar Hall	Site	2.00PM-3.00PM	60.1	65.7	62.7
Permissible Limit For Noise as Per The TNPCCB NORMS, 2017				Maximum 75.0		
<-----End of Report----->						
<b>NOTES:</b>						
The sound levels tested in the above locations are within the prescribed limits of TNPCCB 2017 standard limits, except S.No.2.						
<b>Report Confirmed by</b>			<b>FOR IGNITE ENVIRONMENTAL SERVICES</b>			
						
			<b>Authorized Signatory</b>			



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# ENERGY AUDIT REPORT

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M.I.E.T ENGINEERING COLLEGE

**Trichy-Pudukottai Road, Gundur Trichy-620007**



05 June – 06 June 2019

**IGNITE ENGINEERING**

Chennai



## Introduction

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Energy Auditing is a tool for identifying energy efficiency potential and measures. An energy audit is an important tool or method for finding such potentials for energy efficiency measures and for assessing their financial viability, which can be carried out at different levels. A simple level just includes a brief inhouse inspection as well as assessing the broad energy input and output of a system – this identifies low cost energy saving opportunities. Medium level audits include an in-depth analysis of energy costs, energy usage and system characteristics along with on-site energy demand measurements to identify energy efficiency measures which are more capital intensive and need to be aligned with the financial budget plan of the Institutions

Energy Audit is assigned to the Criteria 7.1.3 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade a, Grade B or Grade C according to the scores assigned at the time of accreditation. The aim of organizing Energy Audit is to upgrade the energy Conservation in and around the institutes, colleges, companies and other organization. It is carried out with the aid of performing tasks like Analyzing Existing Energy Resources, energy saving and others to turn

## About the College

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M.I.E.T Engineering College is a Self Financing Muslim Minority Institution college affiliated to Anna University and accredited with **NBA** with ISO 9001 – 2015 Certification for Quality Management Systems It has been recognized as a premier institution of higher learning for job-oriented courses.



The campus is spread over an area of More than 10 acres of land and is Green campus situated in Trichy - Pudukkottai Main Road The college offers 5 Under Graduate Courses and 5 Post Graduate courses and research Programs In Few disciplines There are More than 1600 students and 150 teaching faculty in the college which is promising to grow rapidly.

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**ENERGY AUDIT OBJECTIVE:**

- Our objective is to Fetch and analyze the data to find the possible ways of energy Conservation.
- It will be useful to calculate the amount of power consumed and wasted in a network of specified location.
- To find and implement the solutions that is acceptable and feasible.

**Scope:**

- Data Collection – Physical walk through audit in all Locations
- Facility Description - characterize building usage, occupancy, size and construction.
- Material Inventory - detailed components list including utility, life and efficiency
- . Energy Conservation Measures – identify and evaluate opportunities for Money savings and economic returns.
- Green /Distributed Energy Measures – evaluate economic viability of various renewable/distributed energy technologies.
- Awareness – to create awareness regarding efficient energy consumption and to provide with deserving rewards.

**METHODOLOGY FOR DETAILED ENERGY AUDIT**

**1. PRE AUDIT PHASE**

- ✓ Plan and organize
- ✓ Walk through audit
- ✓ First Sight observation and assessment

**2. AUDIT PHASE**

- ✓ Analysis of energy use
- ✓ Identification of energy conservation opportunities
- ✓ Consolidation and refining ideas
- ✓ Select most promising techniques
- ✓ Cost benefit analysis

**3. POST AUDIT PHASE**

- ✓ Implementation of ideas .
- ✓ Follow up and periodic review .
- ✓ Monitor the performance.



**1. AUDITING PARAMETERS**

**REAL POWER:** In our campus most of the loads are real loads. Ex. Lighting loads

**REACTIVE POWER:** In laboratories, we are using reactive loads.

**POWER FACTOR:** Since we are provided with super capacitor banks for compensation, we can able to maintain the power factor of 0.89% – 0.95%.

**2. AUDITING METHODS:** In this project we have carried out the audit about lighting system and inductive loads in our campus.

**TYPES OF ENERGY AUDIT**

- ✓ Walk-through or preliminary audit
- ✓ General audit/comprehensive energy audit
- ✓ Action audit In this project we have carried out detailed energy audit. It is the most efficient type that is preferred for educational institution.

### **Energy Management**

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. The study carried out also analyzed the use of alternate energy resources that are eco-friendly.

### **Observations**

The source of energy for all the buildings within the campus is through electricity only. The institution consumes about **1275.4kW/Month**. However **1000Watts** of the daily electricity requirement is supplied from **solar energy**.

The campus contains Lights and fans in use. The entire campus including common facility centers are equipped with LED lamps and LED tube lights, except at few locations. Besides this, photovoltaic cells are also installed in the campus as an alternate renewable source of energy.

Computers are set to automatic power saving mode when not in use. Solar water heaters are installed in hostel buildings and staff quarters as to promote renewable energy. Also, campus administration runs switch-off drill on regular basis. Equipment like Computers is used in power saving mode.

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Solar panels in the campus



Photovoltaic cells control unit

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### **Solar street Lights**

A Plenty Of Solar Based Street lights are Installed in around the Colleges to promote alternate Energy resources.

### **Advantages of LED Solar Street Lighting Projects**

1. Lower power consumption
2. Higher power, higher intensity
3. Save all your electricity cost. Save electric transformer and cable cost. Free maintenance
4. Environmental Impact - Eliminate Hazardous Disposal
5. Longer lifetime: Lifespan of solar panel is 20-25 years. Lifespan of LED street lights is 6-8 years. Lifespan of battery is 4-6 years.



Solar Based Street Lights around College



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**Diesel Generator**

The College Campus is Equipped With 125Kva Diesel Generator for power Pack Incase of Power Failures and Fed power to Laboratory and It will be Periodically Observed the Ambient Air Quality Monitoring to Maintain the Pollution Free Environment



**Diesel Generator 125Kva Installed in the College**

**Biogas Plant**

In M.I.E.T Engineering College, kitchen waste is used to generate thermal energy for cooking and heating. The bio-gas produced from food waste, decomposable organic material and kitchen waste, consisting of methane and a little amount of carbon dioxide is an alternative fuel for cooking gas (LPG). Kitchen waste is processed and moistened to produce a suspension that subsequently undergoes a fermentation process. Fermentation produces biogas – a valuable energy source – that is desulphurised by biological means. Also, the waste materials can be disposed off efficiently without any odour or flies and the digested slurry from the bio-gas unit can be used as organic manure in the garden. The major components of the bio-gas plant are a digester tank, an inlet for feeding the kitchen waste, gas holder tank, an outlet for the digested slurry and the gas delivery system for taking out and utilizing the produced gas.

The College Campus is Equipped With 0.5m<sup>3</sup> Capacity Bio Gas Plant to Promote the Alternate Energy Resources Method.

Eco-friendly technology allows for the production of renewable natural gas in the form of biomethane. The facility processes about 1000kg tons of kitchen waste every day – mainly the contents of organic waste from College Hostels, as well as leftover food from Campus canteens and expired food.



0.5 M<sup>3</sup> Capacity Bio Gas Plant Installed inside the Campus

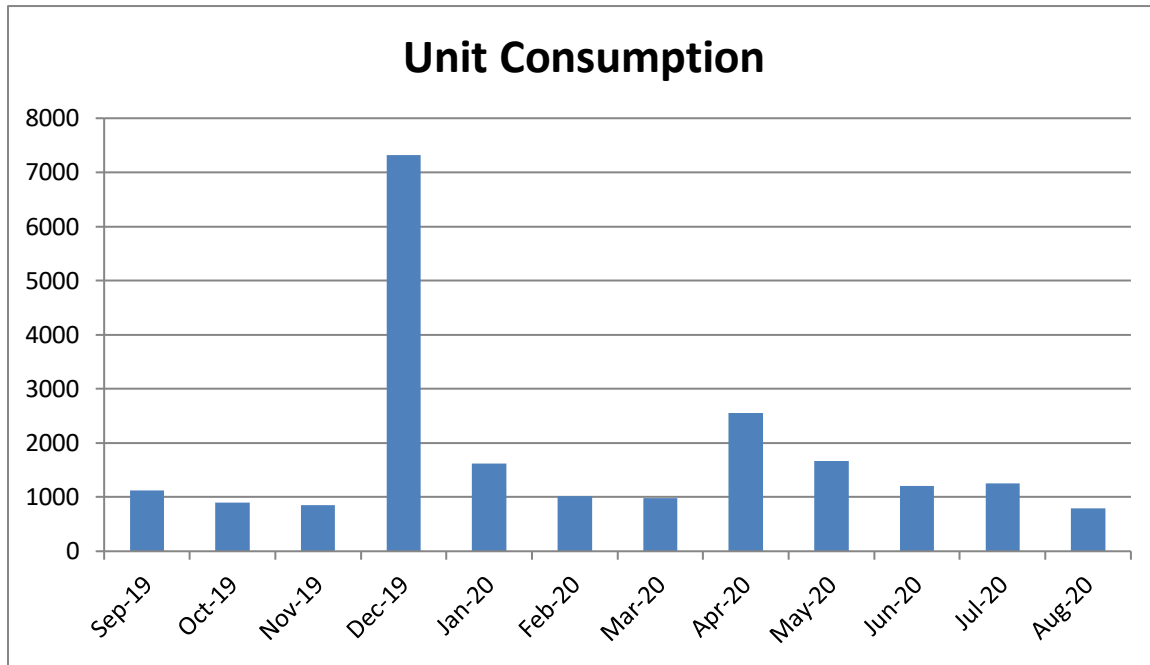
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**Power Consumption Details**

<b>Sr.No.</b>	<b>Month</b>	<b>Consumption Unit(KW)</b>
1	Sep-19	1125
2	Oct-19	900
3	Nov-19	855
4	Dec-19	1320
5	Jan-20	1626
6	Feb-20	1023
7	Mar-20	985
8	Apr-20	2550
9	May-20	1665
10	Jun-20	1211
11	Jul-20	1255
12	Aug-20	790
<b>Total Power Consumptionin Yearly</b>		<b>15305KW</b>
<b>Average Power Consumption in Monthly</b>		<b>1275.4KW</b>

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**Consumption Chart**





**Energy Rating**

After the complete survey and analysis of the campus as per ISO 50001:2018 Energy Management System Standards, we rate the campus Score 4/5.

**Recommendations**

- The management should support more of renewable and carbon-neutral electricity options on any energy- purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.
- More LED lights should be installed to reduce power consumed for lighting.
- The campus administration should run switch-off drill on regular basis.
- In campus premises electricity should be shut down from main building supply after occupancy time, to prevent power loss due to eddy current.
- 5-star rated Air Conditioners, Fans and CFLs should be used.
- Cleaning of tube-lights/bulbs to be done periodically, to remove dust over it

### *Conclusion*

Energy Conservation is the wave of the future. The world is quickly moving towards Energy sustainability. An energy efficient organization is a step towards the direction of renewable energy, environmental protection and sustainable living. Thus concluded that by energy auditing we identify cost effective ways to improve the comfort and efficiency of buildings.

## **Acknowledgement**

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We are grateful to the management and committee members of M.I.E.T Engineering College to award this prestigious project on Energy auditing. Further we sincerely thank the college staff for providing us the necessary facilities and co-operation during the audit. This ample co-operation helped us a lot in making this audit possible and successful.

**FOR IGNITE ENGINEERING**



**ER.P.VIVEK M.E**

**LEED GREEN ASSOCIATE**

**CHARTERED ENGINEER**