

# ENERGY AUDIT REPORT

2023-2024



Learn. Rise. Excel

# GANESH COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)  
Attur Main Road, Mettupatti, Salem - 636 111, Tamilnadu, India  
Phone: 0427 - 2211212, +91 9865440414  
E-Mail: principal@ganeshengcollege.org www.ganeshengcollege.org

Date: 18.03.2024

## Need

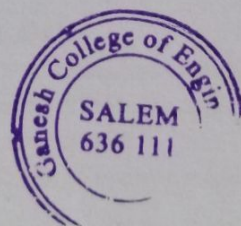
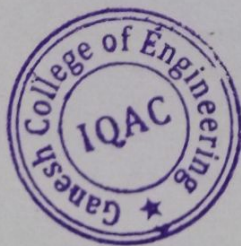
As per the energy conservation Act, 2001, Energy Audit is defined as "The verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption.

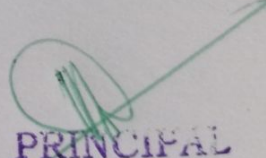
Electricity is the main source of energy to run an educational institution like Ganesh College of Engineering. It takes care of all requirements like lighting, fans, ACs, water motors, RO plants etc.

The scope of audit covers the entire electrical energy requirements of the college, the sources, measurement, consumption, conservation, techniques, use of renewable energy and awareness among staff and students. The scope also includes cost benefit analysis of project done, identification of areas for improvement and recommendation to move towards higher energy efficiency.

The main goals of energy audit are:

- Reducing energy consumption in systematic manner by:
- Constant monitoring and measurement
- Identifying leakages/Wastages
- Alternate energy efficient methods/Products
- Creating awareness
- Becoming self sufficient in energy generation through sustainable methods like renewable energy.
- Saving environment through efficient energy usages as well as saving energy costs for the institution.



  
**PRINCIPAL**  
Ganesh College of Engineering  
Attur Main Road, Mettupatti,  
SALEM-636 111

### Audit parameters

Following are the key parameters used in Energy Audit:

- Energy sources
- Measurement and consumption
- Awareness and communication
- Best practices
- Suggestions/Recommendations

### Observation and Inferences

(i) Management commitment

The Management of the college has shown the commitment towards Energy audit during the pre audit meeting. The institution is working towards energy efficiency by getting tube lights replaced with LED lights, display boards to save electricity and introducing roof top solar power plant. The management was willing to formulate policies and take actions based on energy audit report.

(ii) Analysis of Electrical Load

a. Connected load & consumption Estimates

Air Conditioners consume good amount of power. The star rating of the ACs is as follows:

- 5 star rating=4nos
- 4 star rating=22nos
- 3star rating=1No

This shows that the institution has been conscious about energy conservation

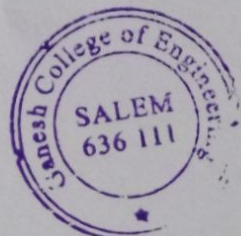
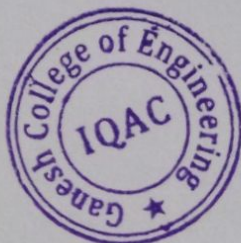
- Hostel : There is a MCB outside each hostel room, which can be switched off when the room is locked
- If tube lights are replaced with LED lights, the power consumption will have. It has been done for a few lights that glow for a longer period.

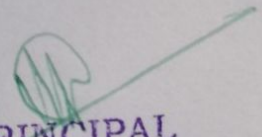
a) EB meter readings

- EB usage charges @Rs.7.50per unit
- Units consumed during 2023-2024 : 66752
- EB charges= RS.58674.5

### Fixed charges calculation:

- Contracted load is 86.09KW
- Fixed charges per KW of contracted load=Rs.60 per month
- Fixed charges per month =87\*60 =Rs.5220
- Fixed charges per year=Rs.62640
- Total cost=Rs.196515 (Rs.257/person per yr)



  
**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111

In general, the college has control over electricity consumption, thru awareness and conscious approach.

b) Alternative sources of Electricity

1. Diesel Generator

QTY	Capacity	Average usage per month	Connected load (KVA)	Diesel Consumed during 2023-24 (in ltr)
1	62.5KVA	13.0L	50	180

- Normally the college does not face much of power outages
- The DG set is switched ON manually if there is a long power cut.
- The major load of UPS connected to the computer labs is disconnected before switching on the DG.

2. Solar power plant

- A roof top solar power plant wit 5KW capacity was installed 3 year ago
- Average Electricity generated per day :5Kw\* 5.5hrs = 26.5 KWH
- Annual savings=26.5 units\*365=9672.5 units
- Monetary savings@ Rs.7.5 per unit=Rs.72543/-

c) Awareness among students and staff

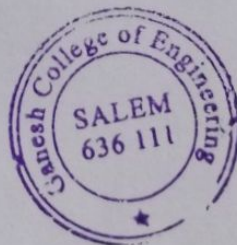
Messages urging students to switch off lights & fans when not in use are displayed near the switch board in the canteen.

d) Best practices

- In spite of the hostel facility the electricity consumption has been under control due to constant monitoring by the staff.
- The class rooms are well ventilated needing minimal usage of lights during the day

e) Suggestions & Recommendations

Periodically all tube lights (40w tube lights) need to be replaced with LED lights.



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111

# ENERGY, ENVIRONMENT & GREEN AUDIT REPORT

**AUDIT CONDUCTED FOR**

**GANESH COLLEGE OF ENGINEERING  
METTUPATTI, SALEM, TAMILNADU**



Learn, Rise, Excel

**AUDIT CONDUCTED BY**

**YOJO NETWORK & TRAINING CENTER**

**(Registered Audit Agencies)**

**GST no: 33AYXPP0304R1ZT**

**(Chennai ♦ Kumbakonam ♦ Karaikal) Mobile:**

**+91-9047205733**

**E-mail: [yojoauditnetwork@gmail.com](mailto:yojoauditnetwork@gmail.com)**



**YOJO NETWORK**





YOJO NETWORK & TRAINING CENTER

(Registered Audit Agencies)

1st Floor, Devas Complex, Mutt St

Kumbakonam – 612 001

Mobile: +91 9047205733

GST no: 33AYXPP0304R1ZT

E-mail: yojoauditnetwork@gmail.com

(Chennai ♦ Kumbakonam ♦ Karaikal)

### ACKNOWLEDGEMENT

Yojo Network & Training Center, Kumbakonam – 612 001 is thankful to the Board of Management, Head of Institution, Faculty and Technical team members of Ganesh College of Engineering, Salem District, Tamil Nadu, India for providing an opportunity to conduct a detailed Energy, Environment and Green Audit process in the college premises. It is our great pleasure which must be recorded here that the Management of Ganesh College of Engineering, Salem extended all possible support and assistance resulting in thorough completion of the audit process. The audit team appreciates the co-operation and guidance extended during the course of site visit and measurements. We are also thankful to all those who gave us the necessary inputs and information to carry out this very vital exercise of green audit.

Finally, we offer our sincere thanks to all the members in the engineering division/technical /non- technical divisions and office members who were directly and indirectly involved with us during collection of data and while conducting field measurements.

#### Management Team Members

Mr.M.Thangavel,	Chairman
Mr. T.VijayGanesh	Secretary

#### Audit Team Members

Er.V.Marimuthu.,B.E.,	UKAS Certified Energy Auditor (KQ-233)
Er.C.Saravanakumar., B.E.,	Lead Auditor-ISO-9001:2015 14001:2015(EMS), UKAS, KQ Reg., COC. Carbon Footprint Auditor Mobile: +91-9047205733
Er.R.Rajkumar,B.E.,	Audit Associate



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

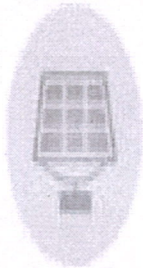
# ENERGY, ENVIRONMENT AND GREEN

## AUDIT REPORT

### INTRODUCTION TO ENERGY-ENVIRONMENT-GREEN AUDIT

#### 5 IDEAS FOR A SUSTAINABLE INSTITUTION INSULATE YOUR INSTITUTION

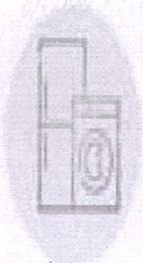
INSTALL RENEWABLE ENERGY  
SOURCES



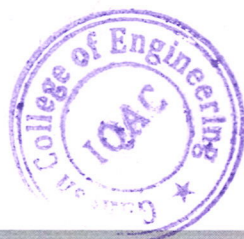
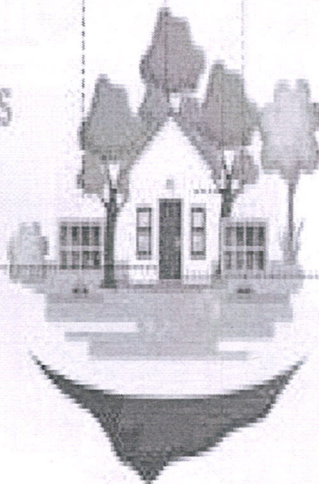
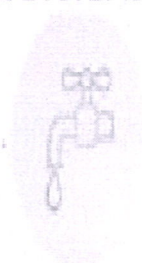
ENERGY-EFFICIENT LIGHTING



CORRECT USE OF APPLIANCES



FLOW RESTRICTION SYSTEMS



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.



## YOJO NETWORK & TRAINING CENTER

(Registered Audit Agencies)

1st Floor, Devas Complex, Mutt St

Kumbakonam – 612 001

Mobile: +91 9047205733

GST no: 33AYXPP0304R1ZT

E-mail: [yojoauditnetwork@gmail.com](mailto:yojoauditnetwork@gmail.com)

(Chennai ♦ Kumbakonam ♦ Karaikal)

### :Preface about the Institution:

Ganesh College of Engineering was established in a well-planned campus with pollution free environment. The College were spread on a sprawling serene land and located on the Salem to Attur Main Road Mettupatti 28 Km from Namakkal, 21 Km from Salem. The College are easily accessible from all major cities by road and railway Networks.

Ganesh College of Engineering is a Division of Sri Ganesh Educational and Charitable Trust. The aim of the GCE is to provide quality Technical Education in order to develop a Good Talented Skills for employability to succeed in the National and International Companies. In the fast-changing global educational scenario, applying technology-driven, value-based learning is a challenge.

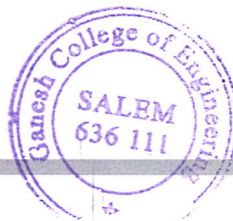
Most of the promoters have rich experience in Teaching, Research and Administration of Engineering Institutions with National and International Exposure. The composition of the team itself is a testimony to the Quality of Education offered at GCE. Most of the promoters themselves directly engage in teaching and career Molding of students.

To be a world class institution to impart value and need based professional education to the aspiring youth and carving them into disciplined world class professionals who have the quest for excellence, achievement orientation and social responsibilities.

To Nurture talent, Entrepreneurship, All-round personality and value system among the students and to foster global competitiveness among students.

To pursue global standards of excellence in all our Endeavors namely teaching, research, consultancy, continuing education and support functions.

GCE is becoming a shining example of 'inclusive' culture providing quality education to students belonging to socially deprived groups. In this sense, this college proves to be a forerunner to the principle of social justice that was powerfully enunciated and enshrined in the constitution of Indian Republic. It aims at producing "Industry Ready World Class Engineers".



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.



**:QualityPolicy:**

Ganesh College of Engineering, Salem maintains various policies to enhance the growth of the students, staff along with the growth of the Institution.

The policies are as follows:

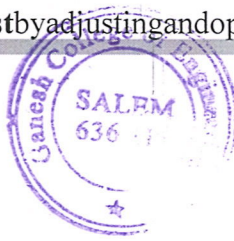
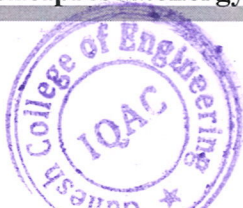
- GREENPOLICY
- ACADEMICPOLICY
- CODEOFCONDUCT
- RESOURCEMOBILISATIONPOLICY
- ENVIRONMENTPOLICY
- ENERGY POLICY
- WASTEMANAGEMENT POLICY
- ADMISSIONPOLICY
- RESEARCHANDPUBLICATIONSPOLICY
- E-GOVERNANCEPOLICY
- GRIEVANC&REDRESSAL POLICY
- INFORMATION TECHNOLOGY POLICY
- PHYSICAL EDUCATION POLICY

**: Scope oftheAudit Process:**

- **Energy Audit:** To conduct a detailed energy audit in the college campus with a main focus to identify judicious usage of electrical and thermal energy (where, when, why and how energy is being utilized).
- **Environmental Audit:** Identification of history of activities, present environmental practices followed, monitoring records and known sources of environmental issues inside the college.
- **Green Audit:** Assessment on Campus greenery in terms of mature trees, flowering shrubs, bushes, medicinal plants, adoption of green energy generation and utilization, reduction of CO<sub>2</sub> due to green energy system and identification of possible implementation and enhancement of current greenery practices.

**:OutcomesoftheAuditProcess:**

- Recommendations based on field measurement with achievable **Energy Conservation (ENCON)** proposals under **No cost / Low cost and Cost investment categories.**
- **Minimizationofpresentenergycostbyadjustingandoptimizingenergyusageand**



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

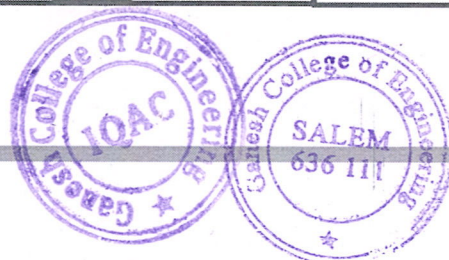
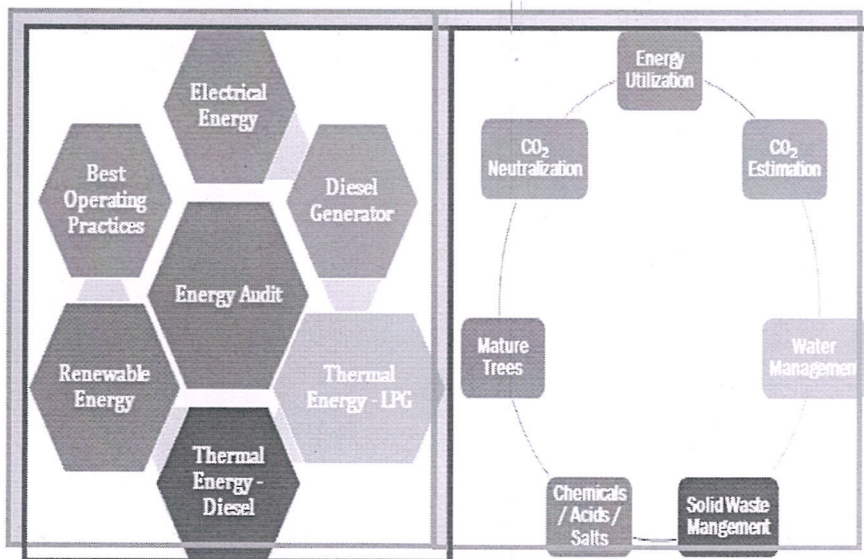
reduction of energy wastage without affecting the regular activities.

- **Identification of possible cost and energy saving from energy conservation, waste reduction, reuse and recycling.**
- Formation of methodology for long term road map for maintaining green environment within the campus and encourage the stakeholders for continuous improvements.

**:Standards Used:**

- Bureau of Energy Efficiency Guidelines to conduct the detailed energy audit process.
- **ISO 14064-Part-1** – Specification with guidance at the organization level for quantification and reporting of GHG emissions and removals (Second Edition).
- **ISO 14064-Part-2** – Specification with guidance at the project level for quantification, monitoring and reporting of GHG emissions reductions or removal enhancement (Second Edition-2019).
- **ISO 14064-Part-3** – Specification with guidance for the verification and validation of GHG statements (Second Edition-2019).
- The Green house Gas Protocol- a Corporate Accounting and Reporting Standard (Revised Edition) released by World Resources Institute & World Business Council for Sustainable Development – 2014.
- Ministry of Environment, Forest and Climate Change Notification on “**Battery Waste Management Rules, 2020**” & “**E- Waste (Management) Rules, 2016**”, & “**Solid Waste Management Rules, 2015**”s.

**Coverage in Energy, Environment & Green Audit Process:**



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

**List of Faculty Members Involved in Audit Process & Data Collection:**

S.No.	Faculty Details	Contribution
1.	<b>P. AMUTHA</b> Assistant Professor, Department of BioMedical .	Over all Coordinator for the Audit Process.
2.	<b>T. GOBI</b> Assistant Professor, Department of Civil	Collection of RO water & Water Distribution system.
3.	<b>R. SUNDARAM</b> Assistant Professor, Department of Comp. Science	Collection of Electrical Energy Parameters from College & Hostel.
4.	<b>M. KARTHIKEYAN</b> Assistant Professor, Department of EEE	Fuel consumption of Transport Vehicles & Transport Incharge.
5.	<b>S. JAMBULINGAM</b> Asso. Professor, Dept. of ECE	Collection of Chemicals/Salts/ Acids.
6.	<b>R. MANIKANDAN</b> Assistant Professor, Department of Mechanical	Collection of LPG & Fire Wood Data.
7.	<b>M. BOOPALAN</b> Assistant Professor, Department of Mechanical	Collection E.B utility & D.G Details.
8.	<b>C. SILAMBARASAN</b> Assistant Professor, Department of IT	Collection of Trees & Plants with Botanical Name.

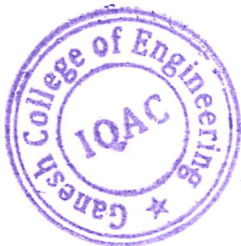



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

**ENERGY, ENVIRONMENT &  
GREEN AUDIT REPORT**

**PART-A: ENERGY AUDIT  
REPORT**

**STUDY ON ENERGY CONSUMPTION &  
GENERATION PATTERN**



  
**PRINCIPAL**  
Ganesh College of Engineering  
Attur Main Road, Mettupatti,  
SALEM-636 111.



# YOJO NETWORK & TRAINING CENTER

(Registered Audit Agencies)

1st Floor, Devas Complex, Mutt St

Kumbakonam – 612 001

Mobile: +91 9047205733

GST no: 33AYXPP0304R1ZT

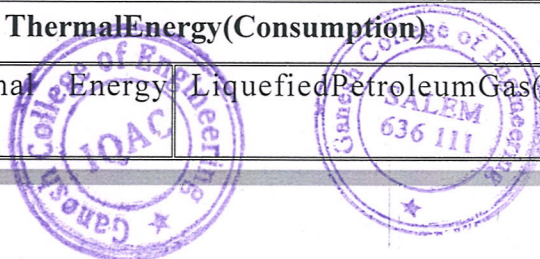
E-mail: yojoauditnetwork@gmail.com

(Chennai ♦ Kumbakonam ♦ Karaikal)

## :AssessmentofExistingElectricalandThermalEnergy Systems:

S. No.	Description	Details
<b>ElectricalEnergy(Consumption)</b>		
1.	Name of the customer (As per the utility bill)	Ganesh College of Engineering, Salem
2.	Type of Utility Supply, Service No.&Tariff.	LTSC.No:044-360-021-045;Tariff-IIB2.46KW
3.	Tariff Structure	Rs.7.50/kWh+Rs.120/ kw as demand charges (fixed charges Accounted for the sanctioned demand)
4.	Energy Suppliers	TamilNadu Generation&Distribution Corporation(TANGEDCO)
5.	PermittedDemand(PD)	SC.No:044-360-021-045– <b>100.0kW</b>
6.	Capacity of Diesel Generator(DG) Sets	<b>62.5KVA–1No.</b> Allareair-cooling.Internalfuel tank& separateearthing done
7.	AnnualElectricity Consumption(kWh)	<b>2023-2024</b> <b>66838</b> <b>Units</b>
8.	Annual Electricity GenerationfromDG(kWh)	<b>1589</b>
9.	Annual Diesel ConsumptionforDG(L)	<b>4536</b>
<b>ThermalEnergy(Consumption)</b>		
10.	Types of Thermal Energy	LiquefiedPetroleumGas(LPG)+ Cooking

**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

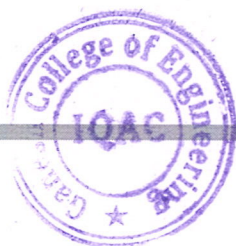


	Used	Coconut Bat(Local+Purchased)	
		Diesel(Ordinary)	Transport+DG

11.	Annual LPG Consumption (kg)	2023-2024	
		1135	
12.	Annual Diesel Consumption for Transport (L)	-	
13.	Annual Wood Consumption for Cooking(Tons)	18.9	

**General Loads(Both Electrical and Thermal)**

14.	Lighting System	<b>Indoor lighting:</b> Conversion of Florescent Tube Light (FTL) into LED in a phased manner
		<b>Outdoor lighting:</b> All the street lightings are LED based Energy efficient lamps(100W).
15.	Fan Loads(Ceiling)	<ul style="list-style-type: none"> <li>All the indoor ceiling fans are conventional fans</li> </ul>
16.	HVAC System	<ul style="list-style-type: none"> <li>Unitary air conditioning system installed in the Required places</li> <li>Most of the AC units are <b>Three star rated</b> and the outdoor units are mostly placed in sun shade</li> <li><b>Total capacity of the AC system is 75.5 TR</b></li> </ul>
17.	Motors and Pump loads	<ul style="list-style-type: none"> <li>Mainly used for water distribution, purification, Wastewater treatment</li> <li>Small motors are used in kitchen equipments</li> </ul>
18.	Uninterrupted Power System(UPS)	<ul style="list-style-type: none"> <li>All the computers, servers, surveillance systems, projectors, telephonic units are connected with UPS with nominal backup time of 15-30 min</li> <li><b>The total capacity of the UPS is 80.5 kVA</b></li> </ul>



**PRINCIPAL**  
 Ganesh College of Engineering,  
 Attur Main Road, Mettupatti,  
 SALEM-636 111.



YOJO NETWORK & TRAINING CENTER

(Registered Audit Agencies)

1st Floor, Devas Complex, Mutt St

Kumbakonam – 612 001

Mobile: +91 9047205733

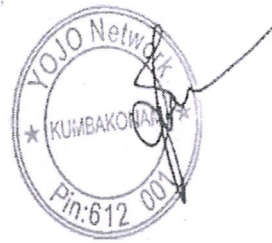
GST no: 33AYXPP0304R1ZT

E-mail: yojoauditnetwork@gmail.com

(Chennai ♦ Kumbakonam ♦ Karaikal)

**:Recommendations and Best Operating Practices:**

- All SSB must be fitted with digital energy meters and the readings must be taken daily. Or connect those meters with EMS and monitor the energy pattern of each building
- Prepare block wise maintenance checklist of electrical and thermal system
- Calculate the Unit per Liter (UPL) for every run of DG and average it for monthly
- Adopt a policy and fix a target to convert the existing conventional lightings and fans into energy efficient lights and fans
- Install AIRCON energy saver gadget which works on dynamic un-saturation principle with the sensor algorithms so that the air conditioners run hours are cut by 20 to 25 %.
- Similar to Fan, now BLDC based ACs are made available in the market; which consumes less amount of energy (Power) during its starting and running condition.
- Install a dedicated unbalanced type servo stabilizer (with suitable power rating maybe 15kVA, 3-Phase input; 3-Phase output) through which all the lighting loads may be connected to ensure the optimum voltage of say 210 V.
- It is essential and the right time to form an Energy Management Team.



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

# ENERGY, ENVIRONMENT & GREEN AUDIT REPORT

AUDIT CONDUCTED FOR

GANESH COLLEGE OF ENGINEERING  
METTUPATTI, SALEM, TAMILNADU



GANESH COLLEGE OF ENGINEERING

AUDIT CONDUCTED BY

YOJO NETWORK & TRAINING CENTER



YOJO NETWORK

(Registered Audit Agencies)

GST no: 33AYXPP0304R1ZT

(Chennai ♦ Kumbakonam ♦ Karaikal)

Mobile: +91-9047205733

E-mail: [yojoauditnetwork@gmail.com](mailto:yojoauditnetwork@gmail.com)



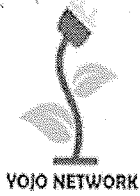


ENERGY, ENVIRONMENT &  
GREEN AUDIT REPORT

PART-B: ENVIRONMENT AUDIT REPORT

ESTIMATION OF CO<sub>2</sub> EMISSION & NEUTRALIZATION  
(ELECTRICITY, DIESEL, LPG & MATURE TREES)

---



# YOJO NETWORK & TRAINING CENTER

(Registered Audit Agencies)

1st Floor, Devas Complex, Mutt St

Kumbakonam – 612 001

YOJO NETWORK Mobile: +91 9047205733

GST no: 33AYXPP0304R1ZT

E-mail: yojoauditnetwork@gmail.com

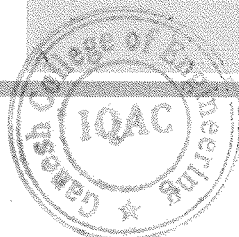
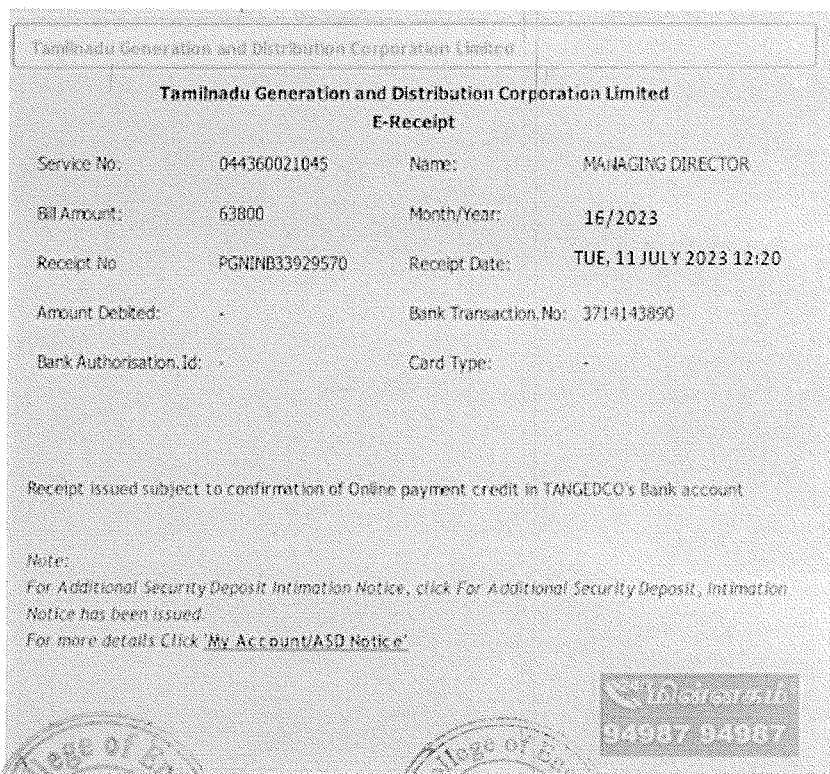
(Chennai ♦ Kumbakonam ♦ Karaikal)

### :AssessmentofAnnualEnergyUsage:

Table-2 Shows the types of energy carriers used for the irregular operation in the college campus along with application area and their source.

Table-2:EnergyCarriers,Application areaandtheirsourcesusedforCollege Operation.

S.No.	Typeof EnergyCarrier	ApplicationArea	Sourceof Procurement
1.	Electricity LT Service for College	Powering to all electrical &electronic/HVAC/Motors/Pumps	FromTANGEDCO Captivepower plant
2.	Diesel	TransportvehiclesandDiesel Generator(CaptiveGeneration)	Fromauthorized distributor
3.	Liquefied Petroleum Gas(LPG)	Usedforcookingapplication	Internally generated+ Locallypurchased
4.	CoconutBat(AgriBio-fuel)		
5.	MatureTrees	Nearly <b>259 Nos</b> of different varieties with more than 20 years old.	
6.	BiogasPlat	Fromfoodandvegetablewastegeneratedin the hostels	



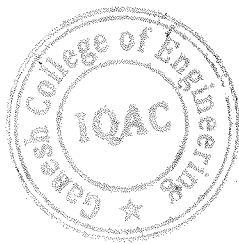
**PRINCIPAL**  
 Ganesh College of Engineering,  
 Attur Main Road, Meltupatti,  
 SALEM-636 111.


:EnvironmentalSystem:CO2 BalanceSheet:

The following tables provide the balance sheet indicating various energy carriers associated with the regular activities and their CO<sub>2</sub> mapping.

**Table-3:EnvironmentalSystem:CO<sub>2</sub>BalanceSheet(2023-24)**

S. No	Annual Energy Consumption & CO <sub>2</sub> Emission			Annual CO <sub>2</sub> Neutralization		
	Description	Usage	CO <sub>2</sub> Emission (Tons)	Description	Usage	CO <sub>2</sub> Neutralized (Tons)
1.	Diesel	4532 Liters	12.9	Mature Trees	210 No's	12.9
2.	Electrical Energy	66752 Units	79.7			
3.	Wood	18.9 Tons	25.5	Biogas	-	--
4.	LPG	1,103 kg	16.6			
Total Emission			134.7	Total Neutralized		12.9
Balance CO <sub>2</sub> to be Neutralized = 134.7 Tons/Annum & Per Capita CO <sub>2</sub> Consumption = 0.30 Tons/Annum (1, Total strength of students, teaching and technical staff = 991)						



  
**PRINCIPAL**  
 Ganesh College of Engineering,  
 Attur Main Road, Mettupatti,  
 SALEM-636 111.



YOJO NETWORK

**YOJO NETWORK & TRAINING CENTER**

(Registered Audit Agencies)

1st Floor, Devas Complex, Mutt St

Kumbakonam – 612 001

Mobile: +91 9047205733

GST no: 33AYXPP0304R1ZT

E-mail: yojoauditnetwork@gmail.com

(Chennai ♦ Kumbakonam ♦ Karaikal)

**1.3: Calculation Table:**

For Electricity = $\left[ \text{kWh} \times \frac{0.82 \text{ kg of CO}_2 \text{ emission}}{\text{kWh}} \right]$
For Diesel = $\left[ \text{Diesel Consumption (Liter)} \times \frac{2.64 \text{ kg of CO}_2 \text{ emission}}{\text{Liter of Fuel Consumption}} \right]$
For LPG = $\left[ \text{LPG Consumption (kg)} \times \frac{3.0 \text{ kg of CO}_2 \text{ emission}}{\text{Kg of LPG Consumption}} \right]$
A mature tree is able to absorb nearly CO <sub>2</sub> at a rate of 21.8 kg / annum; hence total CO <sub>2</sub> to be neutralized.
Is $(21.8 \times 1009) = 22.0$
<b>Tons 1,000 Anum</b>



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.



YOJO NETWORK & TRAINING CENTER  
(Registered Audit Agencies)  
1st Floor, Devas Complex, Mutt St  
Kumbakonam – 612 001  
Mobile: +91 9047205733

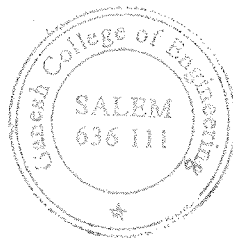
GST no: 33AYXPP0304R1ZT  
E-mail: [yojoauditnetwork@gmail.com](mailto:yojoauditnetwork@gmail.com)  
(Chennai \* Kumbakonam \* Karaikal)

### 1.3 Observations:

- From the above table; it is evident that the college is now trying to neutralize their CO<sub>2</sub> emission through various initiatives like i) Installation of roof top solar PV system & solar thermal hot water generation (cooking & bathing application), ii) Reduction of LPG consumption, iii) Planting more number of trees and iv) implementing various energy conservation measures (FTL to LED conversion, conventional fan to BLDC fans, Energy efficient motor replacement, judicious use of all types of energy etc.,)
- Reduction of electricity consumption by replacing the entire boiler cooking system into LPG based or Wood pellets which reduces considerable amount of amount of CO<sub>2</sub>. The management has to think and go for fuel substitution

### 1.3: References:

1. <https://ecoscore.be/en/info/ecoscore/co2>
2. <http://www.tenmilliontrees.org/trees/#:~:text=A%20mature%20tree%20absorbs%20carbon%20dioxide%20equivalent%20to%20the%20average%20car's%20annual%20mileage.>

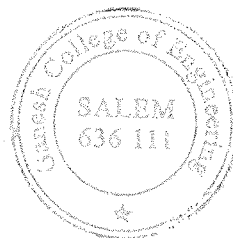
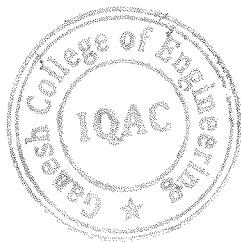



*K. Srinivasan*  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

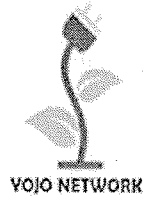
**ENERGY, ENVIRONMENT & GREEN AUDIT REPORT**

**PART -B: ENVIRONMENT AUDIT  
REPORT**

**TRANSPORT & REFRIGERANT GASES IN  
AC SYSTEM**



  
**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.



YOJO NETWORK & TRAINING CENTER  
(Registered Audit Agencies)  
1st Floor, Devas Complex, Mutt St  
Kumbakonam – 612 001  
Mobile: +91 9047205733

GST no: 33AYXPP0304R1ZT  
E-mail: [yojoauditnetwork@gmail.com](mailto:yojoauditnetwork@gmail.com)  
(Chennai \* Kumbakonam \* Karaikal)

### 1.3: List of Transport Vehicles:

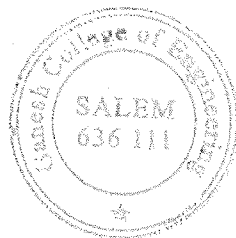
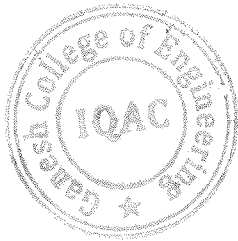
Pollution level of all vehicles is regularly monitored and is maintained within the prescribed limit since the college is committed to provide green environment for better atmosphere.


All the transport vehicles are having pollution certificates and maintaining the emission level within the Pollution Control Board limits

The no. of vehicles available in the college campus is represented in Table-8.

**Table-8: List of Transporting Vehicles available in the College**

S.No.	Type of Vehicle	Quantity	Purpose
1.	Bus	10	Students & Faculty Transportation
2.	Jeep	01	Office and Administrative Works
3.	Car	05	Good Transportation



  
PRINCIPAL  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

[See rules 115 (2)]

**Pollution Under Control Certificate**

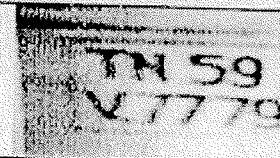
Authorised By:  
State Transport Department

Date : 09/08/2023  
Time : 12:02:20 PM  
Validity upto : 08/02/2024



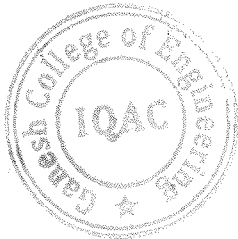
Certificate SL No. : TN05400030011765  
Registration No. : TN59V7779  
Date of Registration : 27/Dec/2004  
Month & Year of Manufacturing : December 2004  
Valid Mobile Number : \*\*\*\*\*9695  
Emission Norms : BHARAT STAGE III  
Fuel : DIESEL  
PUC Code : TN0540003  
GSTIN :  
Fees :  
MIL observation : No

Vehicle Photo with Registration plate  
60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idling Emissions	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon, (THC/HC)	ppm		
High idling emissions	CO	percentage (%)		
	RPM	RPM	2500 ± 200	
Smoke Density	Lambda	-	1 ± 0.03	
	Light absorption coefficient	1/metre	2.45	0.95

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.



PRINCIPAL  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.





YOJO NETWORK & TRAINING CENTER

(Registered Audit Agencies)

1st Floor, Devas Complex, Mutt St

Kumbakonam – 612 001

YOJO NETWORK Mobile: +91 9047205733

GST no: 33AYXPP0304R1ZT

E-mail: yojoauditnetwork@gmail.com

(Chennai \* Kumbakonam \* Karaikal)

**1.3: List of Air Conditioning System along with its Refrigerant:**

Most of the AC system has R-22 as refrigerant which has Global Warming Potential (GWP) of 1,810 and Ozone Depletion Potential (ODP) is Medium. Some of the newly installed AC system are having R-32 as refrigerant which has Global Warming Potential (GWP) of 675 and Ozone Depletion Potential (ODP) is Zero.

**Table-9: List of Multi-variant AC System available in the College**

S.No.	Tonnage Capacity (TR)	Quantity
1.	1.5	10 Nos
2.	2.0	06 Nos
<b>Total</b>		<b>16 Nos</b>

**Note:** The most environment-friendly refrigerants that are available in Indian market currently are “R- 290” and “R-600A”. They are Hydrocarbons and their chemical names are “Propane” for R- 290 and “Iso- Butane” for R-600A

They are completely halogen free, have no ozone depletion potential and are lowest in terms of global warming potential. They also have high-energy efficiency but are highly flammable

as they are hydrocarbons. (Kindly refer: <https://www.bijlibachao.com/bv-conditions/comparison-of-various-refrigerants-r-410a-r-22-r-290-r-134a-used-for-air-conditioners-and-refrigerators.html>).

Refrigerant	Global Warming Potential	Ozone Depletion Potential
R-22	1810	Medium
R-410A	2088	Zero
R-32	675	Zero
	1430	Zero
	3	
	3	

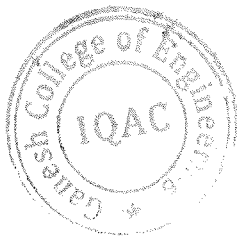
**PRINCIPAL**  
 Ganesh College of Engineering,  
 Attur Main Road, Mottupatti,  
 SALEM-636 111. Zero

**ENERGY, ENVIRONMENT &  
GREEN AUDIT REPORT**

**PART-B: ENVIRONMENT AUDIT  
REPORT**

**USAGE OF CHEMICALS, SALTS & ACIDS**

**(STORAGE, HANDLING & BEST OPERATING PRACTICES)**



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mattupatti,  
SALEM-636 111.



YOJO NETWORK

## YOJO NETWORK & TRAINING CENTER

(Registered Audit Agencies)

1st Floor, Devas Complex, Mutt St

Kumbakonam – 612 001

Mobile: +91 9047205733

GST no: 33AYNPP0304R1ZT

E-mail: [yojoauditnetwork@gmail.com](mailto:yojoauditnetwork@gmail.com)

(Chennai \* Kumbakonam \* Karaikal)

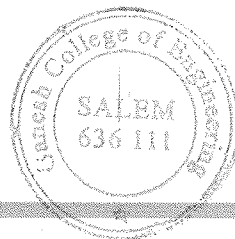
### 1.3: Handling of Chemicals/Salts/Acids used in the Laboratories:


- The science departments use chemicals for experimental applications and are having strict safety rules as follows;
- Well trained faculty and lab assistants who have knowledge about the hazardous nature of each and every chemical are only allowed to handle the chemicals safely.
- Strictly follow the manufacturer's instruction on the container in order to prevent accidents.
- Volatile or highly odorous chemicals, fuming acids are stored in a ventilated area. Chemicals are stored in eye level and never on the top shelf of storage unit.
- All stored chemicals; especially flammable liquids are kept away from heat and direct sunlight. Reactive chemicals are not stored closely.
- Hazardous and corrosive chemicals are kept on sand platform to avoid corrosion.

First aid box and fire extinguisher are readily available in the laboratory.

### 1.3 Storage of Chemicals/Salts/Acids:

- Less concentrated chemicals, salts and acids are stored in proper racks; cupboard and high concentrated acids are stored in separate area filled with sand.
- Most of the chemicals, salts and acids used in the science departments are inorganic in nature and no harmful effects are created during the experiment process.
- However after completion of each experiment, the wastes are washed in the water sink and are rooted to common STP.
- Only trained teaching and non-teaching staffs are handling the chemicals and also they are well trained to handle any abnormal situations.
- Laboratories with chemicals are well ventilated with proper emergency exits. Adequate and correct sequence of fire extinguishers is placed near all the laboratories.



  
PRINCIPAL  
Ganesh College of Engineering  
Attur Main Road, Mettupatti,  
SALEM-636 111.

# **Environment Audit Report 2023-2024**

- ✓ **water management**
- ✓ **Solid waste  
management**
- ✓ **Carbon foot print**



# GANESH COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)  
Attur Main Road, Mettupatti, Salem - 636 111, Tamilnadu, India  
Phone: 0427 - 2211212, +91 9865440414  
E-Mail: principal@ganeshenggcollege.org www.ganeshenggcollege.org

Date: 17.10.2023

## I. WATER MANAGEMENT AUDIT REPORT

2023-2024

### 1. Water Management

#### Need

Water which is precious natural resources available with fixed quantum. The availability of water is decreasing due to increasing population of nation, as per capita availability of utilizable water is going down. Due to the ever rising standard of living of people, industrialization, urbanization, demand of fresh water is increasing day by day. The unabated discharge of industrial effluent in the available water bodies is reducing the quality of the sample sources of water continuously. Hence, the national mission on water conservation was declared by the then Hon. Prime Minister appealed to all citizens to collectively address the problem of water shortage, by conserving every drop of water and suggested for conducting water audit for all sectors of water use. A water audit is a non site survey & assessment to determine and improve efficiency of water use.

#### Audit Parameters

Following are the Key parameters used in water management audit:

1. Sources of water
2. Quality of water
3. Measurement & consumption
4. Waste water Disposal
5. Awareness and Communication
6. Best practices
7. Suggestions/Recommendations

#### Observation and Inferences

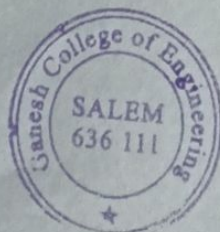
##### 1. Sources of water


Source	Nos	Depth-feet
a) Bore well	2	Range 200-250
b) Open well	1	42 (around 30ft diameter)

##### 2. Water quality

###### a) Testing of water sources

- The water from the open well source is pumped and stored in overhead tanks before being fed to the utilities. The bore wells are used occasionally only.



  
PRINCIPAL  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

- The water is being used as it is for all general purpose like washrooms, Canteen, labs, cleaning purpose, supply to Ro plant and gardening.

**b) purification methods**

- There is well maintained RO plant of 1000ltr capacity. Ro water per day of 1000 liters is generated for drinking purposes.
- The reject water from the RO plant is collected separately and used for watering the garden.
- The quality of RO water is maintained by the agency who visit the plant periodically.

**3. Measurement and Consumption**

The usage of water are a Hotel, Canteen, Construction, Gardening and Ro plant. The canteen is located inside the college Campus.

Quantity of water used per day - 16,000liters

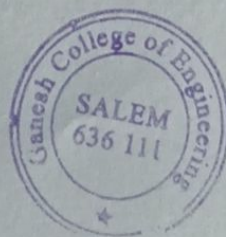
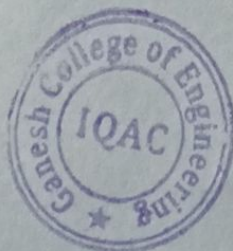
water flow meter installed -No

Water storage	Nos	Capacity -Liters
Overhead tank	5	main tank 12,500 Rest 8,000each

Areas of water Usage	In Litres	Percentage of water consumption
Hostel	5900	30
Canteen	4100	21
Construction & Gardening	3900	20
College campus Utilities	5500	28
Total	19400	

**4. water Conservation**

Sl#	Desired Conservation methods	Observation
1	Rain water Harvesting(RWH)	Well -maintained RWH pits are located around the buildings to ensure all water collected on roof tops is directed towards the tips to recharge ground water.
2	Water Level Indicators/Controllers	Automatic water level controller is installed for RO plant
3	Water flow meters	Yet to be done
4	Re-cycling of waste water	Bio septic tank implemented
5	No leaky taps/pipes/joints	Water taps and pipes are well maintained
6	Drip irrigation or use of STP treated water for gardening	Drip irrigation is used for gardening
7	Re-use of RO reject water	Being used for gardening.



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

**5. Waste water disposal**

Currently waste water is getting collected at 2 septic tanks and disposed periodically thru municipal sewage tankers. Eh septic tanks have soak pits. Waste water recycling with sewage water treatment is not yet to be implemented.

**6. Awareness and Communication**

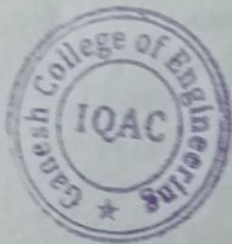
Save water slogans displayed at wash areas

**7. Best practices**

- Rain water harvesting properly implemented
- The open well is well-maintained, surrounded by open space allowing water to get absorbed all around and recharge the well.
- Water conservation awareness slogans are displayed at water outlets to save water.

**8. Suggestions & Recommendations**

- Water consumption to be measured using flow meters. Measurement will help in looking at ways to reduce usage.
- RO water testing to be done.



  
**PRINCIPAL**  
Gateesh College of Engineering,  
Attur Main Road, Meltupatti,  
SALEM-636 111.

# I. SOLID WASTES WATER MANAGEMENT AUDIT REPORT 2023-2024

## SOLID WASTE MANAGEMENT NEED

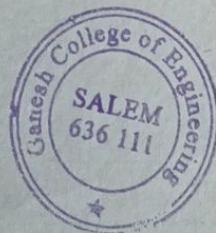
Solid waste generation and Management is a burning issue. Unscientific handling of solid waste can create threats to everyone. Solid waste management reduces or eliminate the adverse impact on the environment and human health. A number of process are involved in efficiently managing waste for an organization. It is necessary to manage the solid waste properly to reduce the load on waste management system.

The solid waste audit focused on volume, type and current management practice of solid wastes generated in Ganesh College of Engineering campus. The solid waste collected was paper waste, plates, bio-degradable waste, construction waste, glass waste, electronic (e waste )and other miscellaneous waste. Solid waste disposal management audit is an on -site survey & assessment to determine and improve efficiency and effective waste disposal system.

### Audit parameters

Following are the key parameters used in waste management audit:

1. Sources of waste generation
2. Types/Volume of waste generated
3. Segregation of waste
4. Disposal Mechanism
5. Best practices
6. Awareness and Communication
7. Suggestions/Recommendations



  
**PRINCIPAL**  
Ganesh College of Engineering  
Attur Main Road, Mettupatti  
SALEM-636 111.



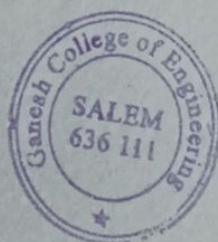
## Observation and Inferences

### 1. Sources of waste generation

Sl#	Sources	Types of waste
1	Students	Paper, pen, Refill, plastic water bottles, food waste, paper plates, other plastic material, washing, Urinals, chemicals, Electronics parts, paper plates, Food waste, sanitary napkins.
2	Administration (Staff and Teachers)	Paper, pen, Refill, plastic & other plastic material, washings, urinals, broken furniture, & Glass, E-waste, sanitary napkins.
3	Natural accumulation (Garden, playground & Parking area)	Dry leaves, paper waste, paper plates, food wastes.
4	Others (Visitors)	Paper, plastics

### 2. Types/Volume of water generated

Sl#	Category	Types	Annual Volume in KGS
1	E-Waste	Computers, Electrical appliances, Electronics parts	Around 1200 reams of A4 sheets are used annually.
2	Plastic Waste	Pen, Refill, plastic water bottles, & other plastic containers	
3	Solid Waste	Damaged furniture, Glass, paper waste, paper plates, food waste, metal	
4	Wet Waste	Waste water, chemical waste	
5	Bio Medical Waste	Sanitary Napkin	



  
**PRINCIPAL**  
 Ganesh College of Engineering,  
 Attur Main Road, Mettupatti,  
 SALEM-636 111.

### 3. Segregation of waste

- Bins kept at all waste collection points with 3 colors for 1<sup>st</sup> level of segregation : Bio degradable, plastics and Bio medical waste.
- The segregation dry waste is accumulated and over handed to ITC WOW through M/s.YoJo Network (with Whom GCE) has agreement) for re-cycling of papers, old office records , and documents. [proper disposal of billboard, dust bin papers, and plastics.
- Disposal of wet waste is accumulated and handed over to Green Era Recyclers with whom GCE has agreement) for Re-cycling of E-waste.

### 4. Best practices'

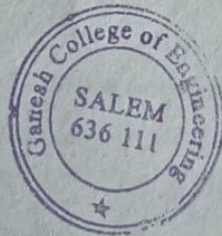
- College has banned single -use plastics/polythene covers in the campus.
- Coloured bins with labeling for proper segregation of different types of waste are kept at every floor of the campus.
- Dry waste (all types of paper & plastic items) are disposed through ITC authorized agency for safe re-cycling and safe disposal


### 5. Awareness & Communication

Organized public Awareness Webinar on "ILL Effects of Using Plastics"

### 6. Suggestions & Recommendations

- College to measure the amount of solid waste generated. Only then they can take steps to reduce waste generation .
- Reduce use of virgin paper, & Switch to recycled paper. As a further step move all transactions and communication within the college to electronic mode.



  
**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

### III CARBON FOOT PRINT AUDIT REPORT

2023-2024

#### CARBON FOOT PRINT MANAGEMENT

##### Need

The most common greenhouse gases are carbon dioxide, water vapour, methane, nitrous oxide and ozone. Of all the greenhouse gases, carbon dioxide is the most prominent greenhouse gas, comprising 402 ppm of the Earth's atmosphere. The release of carbon dioxide gas into the earth atmosphere through human activities is commonly known as carbon emissions. The question is what should be done to reduce carbon emissions. Often the challenge lies in choosing just the right approach that will contribute most to the objective. Naturally, the results of these interventions also have to be monitored and assessed. Many colleges want to reduce their carbon emissions, including mobility, waste, and energy consumption. So, gaining insight into CO2 emissions is extremely important.

An important aspect of doing an audit is to be able to measure your impact so that we can determine better ways to manage the impact. We can determine what our carbon footprint is, based on the amount of carbon emissions created by fossil fuels. One aspect is to consider the distance and method traveled between and college every day. It undertakes the measure of bulk of carbon dioxide equivalents exhaled by the organization through which the carbon accounting is done. It is necessary to know how much the organization is contributing towards sustainable development. As per latest estimate the average carbon emission per capita in India is 1.9MT/capita out of this transportation accounts for approximately 15%.

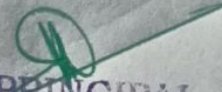
In the case of Educational Institutions, the major sources of carbon emission are diesel generator, cooking and vehicles. While vehicles are not driven much within the campus, the total emissions due to travel by students and staff from their home to the campus is an important parameter to be measured.

##### Audit parameters

Following are the key parameters used in carbon emission audit:

1. Sources, Measurement of carbon foot print
2. Awareness and communication
3. Best practices
4. Suggestions and Recommendations



  
**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

## Observation and Inferences

### 1. Measuring carbon foot print

a) Diesel generator: There is a 62.5Kva installed in the college premises, with an average consumption of 10 ltrs of diesel every month. Emissions due to use of DG.

- Capacity 62.5Kva
- Diesel consumption per annum (2023-2024) 120 ltrs
- CO2 emission per annum @264 Kg/ltr 317
- Co2 emissions in kg per person 0.43 annum.

b) Cooking Gas: Two commercial LPG cylinders of 19 kg are used in the canteen kitchen. They are refilled once every month. Emissions due to use of LPG.

Capacity	19kgs
No. of cylinders per year	26 NOs
Total Kgs per year	460 kgs
CO2 per kg	3Kgs
Total CO2 per year	1368 Kgs
Carbon emission per person per annum	1.87 Kgs

c) Vehicular emissions:

- The college has parking for 50 Two wheelers, 10 bicycles, 10 buses, 4 cars
- The parking lot is hardly 100 mtrs from the gate.duet to which vehicular movement inside the premises is limited
- Students mostly travel through public transport or walk from nearby localities.
- Based on feedback from students and staff, the transport from their residence to college has been estimated and the carbon emissions calculated as follows:

### Summary (travel based carbon emissions)

#79 tons of carbon dioxide per year due to travel to the college by students & Staff

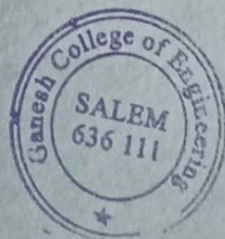
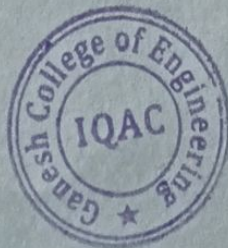
#This amounts to 104kgs per person per year.

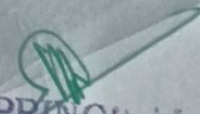
#16% of persons are in the "Zero emission "category

#86% of persons use public transport & clean transport for travel.

### 2. Suggestions/Recommendations

- College to continue and sustain good practices of using transportation by both students and staff.
- The college can put up a display board on all the initiative related to environment including fuel emissions.



  
PRINCIPAL  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

## Observation and Inferences

### 1. Measuring carbon foot print

a) Diesel generator: There is a 62.5Kva installed in the college premises, with an average consumption of 10 ltrs of diesel every month. Emissions due to use of DG.

- Capacity 62.5Kva
- Diesel consumption per annum (2023-2024) 120 ltrs
- CO2 emission per annum @264 Kg/ltr 317
- Co2 emissions in kg per person 0.43 annum.

b) Cooking Gas: Two commercial LPG cylinders of 19 kg are used in the canteen kitchen. They are refilled once every month. Emissions due to use of LPG.

Capacity	19kgs
No. of cylinders per year	26 NOs
Total Kgs per year	460 kgs
CO2 per kg	3Kgs
Total CO2 per year	1368 Kgs
Carbon emission per person per annum	1.87 Kgs

### c) Vehicular emissions:

- The college has parking for 50 Two wheelers, 10 bicycles, 10 buses, 4 cars
- The parking lot is hardly 100 mtrs from the gate duet to which vehicular movement inside the premises is limited
- Students mostly travel through public transport or walk from nearby localities.
- Based on feedback from students and staff, the transport from their residence to college has been estimated and the carbon emissions calculated as follows:

### Summary (travel based carbon emissions)

#79 tons of carbon dioxide per year due to travel to the college by students & Staff

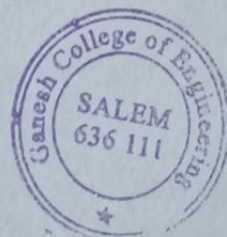
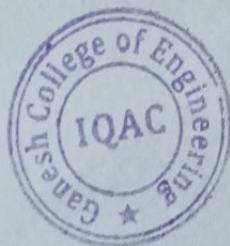
#This amounts to 104kgs per person per year.

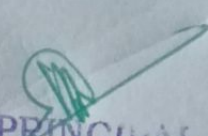
#16% of persons are in the "Zero emission" category

#86% of persons use public transport & clean transport for travel.

### 2. Suggestions/Recommendations

- College to continue and sustain good practices of using transportation by both students and staff.
- The college can put up a display board on all the initiative related to environment including fuel emissions.



  
PRINCIPAL  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.



# GANESH COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)  
Attur Main Road, Mettupatti, Salem - 636 111, Tamilnadu, India  
Phone: 0427 - 2211212, +91 9865440414  
E-Mail: principal@ganeshenggcollege.org www.ganeshenggcollege.org

Dr. M. SUBAS CHANDRABOSE., M.Tech., Ph.D.,  
Principal

Date: 07.10.2023

## Environment Sustainability Policy

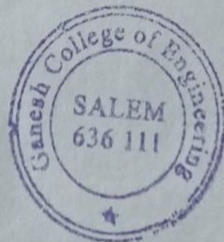
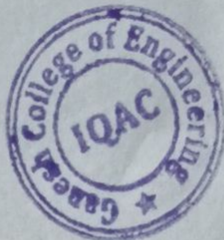
The students and the staff of Ganesh College of Engineering believe that "What we give to Mother Nature is returned back to us". The Ganesh College of Engineering campus is hardly a few steps away from the Green zone of Salem i.e. Rural Area. Whatever activity we do at our college campus will affect the green zone area. Since 2011, the college has always had sustainable initiatives towards the environment at the core of all activities, and the result of these activities is that 75 % of total area of campus is green area. Green area of campus has landscaping, botanical garden, lawns, and playground. College green is habitat for large variety of species of grasses, herbs, shrubs, and trees. We at GCE pledge to provide the protection and improvement of the environment to make the Campus: Green, Energy and ensure Environment Sustainability.

Policy Purpose and Objective Ganesh College of Engineering supports and encourages awareness campaigns, seminars, workshops, and other interactive sessions:

- To facilitate effective implementation of the Green Campus, Energy and Environment sustainability.
- To reduce, recycle and reuse.
- To ban the single use plastic in our premise to make it a 'Plastic Free Campus'.
- To undertake auditing procedures for yearly assessment of our environmental policy implementation and adopt the feedback of auditing agency for improvement.
- To ensure judicious use of all the resources and save for the future generations.
- To support innovative eco-friendly solution for any environmental related problems.

### Aspects of the Policy

- Green Campus Initiatives
  - ❖ Landscaping initiatives
  - ❖ Naming and numbering of existing trees
  - ❖ Building and Infrastructure is maintained in an eco-friendly environment.
  - ❖ Placement of nest for birds



PRINCIPAL  
Ganesh College of Engineering  
Attur Main Road, Mettupatti  
Salem 636 111

• **Environment Initiative**

- ❖ Water Conservation through Rainwater Harvesting System
- ❖ Drainage system for collection of wastewater
- ❖ Collaboration with agencies for proper disposal of Solid, Liquid, biomedical waste
- ❖ Collaboration with agencies for proper disposal of E-waste
- ❖ Motorized Vehicle Free Campus
- ❖ Regularly organisation of cleanliness drives
- ❖ Tree plantation drives are conducted frequently
- ❖ Signage for ban of plastics for plastic free campus
- ❖ Pedestrian friendly pathways

• **Efficient and Sustainable Energy Initiative**

- ❖ Installation of rooftop Solar Power Plant
- ❖ Installation of Energy Efficiency Equipment/Signage
- ❖ Switching off all the appliances when not in use and signage for the same
- ❖ Energy saving by use of LED lights.
- ❖ Energy saving by use of 3+ star energy saving appliances.

• **Waste Recycling System**

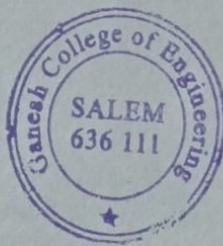
- ❖ Collection of wastepaper produced in the campus
- ❖ To reduce paper usage, digitization of attendance record and internal assessment and other work initiated
- ❖ Duplex Printer are purchased for the day-to-day work in administrative office
- ❖ Collaboration for wastepaper recycle

• **Audits**

Annually College is conducting Green Audit, Environment Audit and Energy Audit by external agencies and the recommendations of green audit report is implemented in a time bound plan for the benefit of our stakeholders and society.

• **Awareness Initiatives**

- ❖ Regularly organizing workshop, competitions and awareness program for environment related issue in and off campus area
- ❖ Environment-centric Student Societies and Departmental Activities
- ❖ Ban of Plastic campaigns in Campus
- ❖ Organizing anti-cracker campaigns

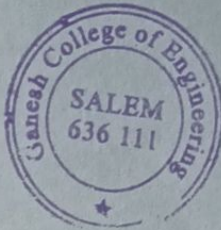
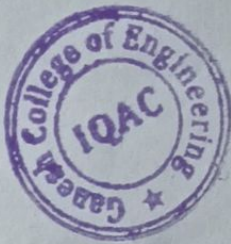


  
**PRINCIPAL**  
Ganesh College of Engineering  
Attur Main Road, Marjapuram  
Salem - 636 111

**Process and Procedure for Implementation of Policy**

- ✓ A detailed action plan will be drawn to identify the areas of improvement in the scope of the policy.
- ✓ Time-to-time circular and notifications are issued.
- ✓ Display of signage for the implementation and scope of this policy.
- ✓ MoU's with external agencies are signed for waste management, recycling and other requirements for environment sustainability.

The policy is subjected to periodic amendment/review whenever it is necessary through proper committees and administrative order.



**PRINCIPAL**  
Ganesh College of Engineering  
Attur Main Road, Marudath  
Salem 636 111



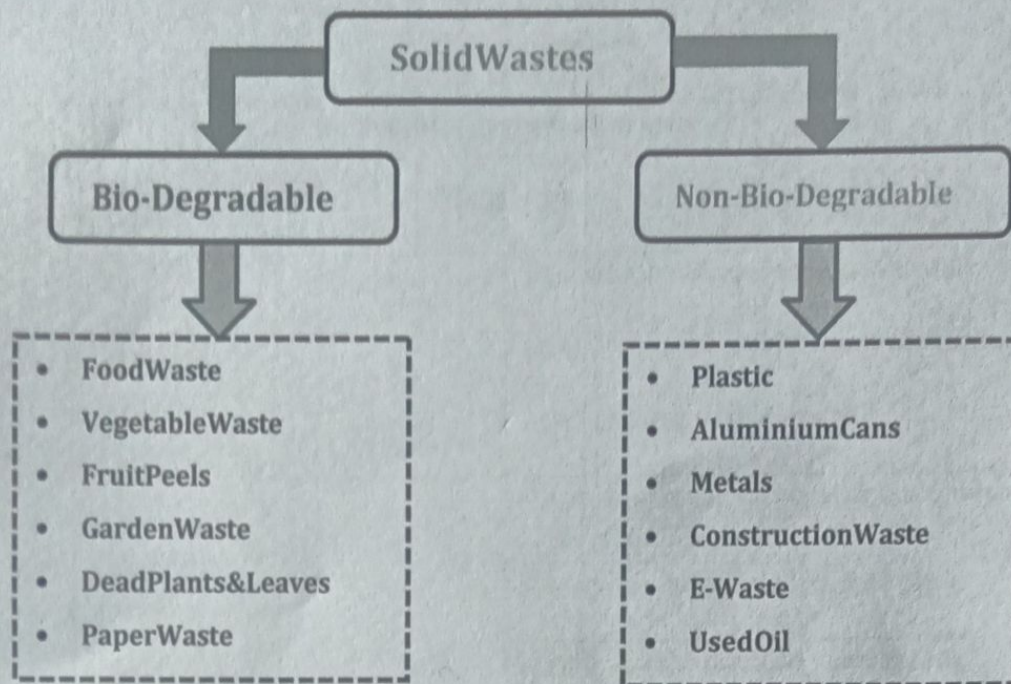
**ENERGY, ENVIRONMENT & GREEN AUDIT  
REPORT**

**PART-C: GREEN AUDIT  
REPORT**

**2. WASTE HANDLING & MANAGEMENT**

1.3: Solid Waste Management System:

Different types of wastes generated inside the college premises are represented in the block diagram given below.

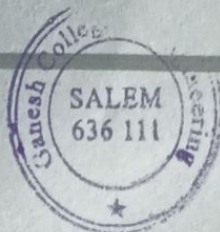
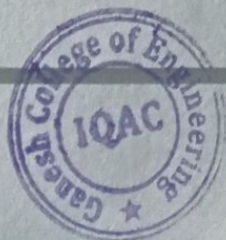


1.3: Process of Solid Waste Management:

The college management practices some methods to treat the waste generated and Table-14 shows the process of treating the solid waste generated inside the college campus.

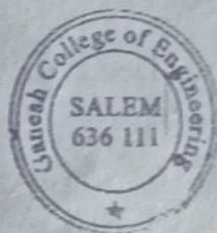
**Table-14: Process of Waste Management**

S.No.	Waste Type	Waste Treatment
<b>Bio-Degradable Waste Management</b>		
1.	Food and Vegetable Waste	Collected and dumped in a yard (used as manure)
2.	Garden Wastes and Plant Leaves	Daily collected and dumped in a yard



**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

3.	Paper Waste	Collected and stored in a separate place
		Sold to third party for recycling
4.	Napkin Pads	Collected, dumped in a yard; set fire and destroyed
<b>Non-Bio-Degradable Waste Management</b>		
5.	Plastics	Banned in the college campus (Welcome step). The chemical/salt storage plastic containers are disposed to third party.
6.	Metals	Construction metals or metals from any other Sources are stored in a separate place.
		Used for sale to third party for recycling
7.	Transport Oil+Tyres	Stored in a separate place and used for sale to Third Party.
8.	Transport Vehicle and Batteries	Computer Procuring new batteries with buyback offer (old battery replacement)
9.	Used edible oil	Almost zero waste. Mostly used for internal Cooking And frying.
10.	E-Waste Management	Used for sale to third party for recycling



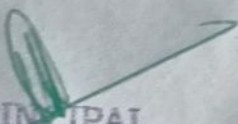
  
**PRINCIPAL**  
 Ganesh College of Engineering,  
 Attur Main Road, Mettupatti,  
 SALEM-636 111.



Fig.5:SolidWasteManagement(Collection,Segregation, Storage&Safe Disposal)



  
**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Meltupatti,  
SALEM-636 111.

**ENERGY, ENVIRONMENT & GREEN AUDIT REPORT**

**PART-C: GREEN AUDIT  
REPORT**

**2. ASSESSMENT ON MATURE TREES  
& BIO-DIVERSITY**



YOJO NETWORK & TRAINING CENTER

(Registered Audit Agencies)

1st Floor, Devas Complex, Mutt St

Kumbakonam - 612 001

Mobile: +91 9047205733

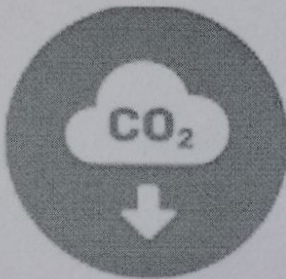
GST no: 33AYXPP0304R1ZT

E-mail: [yojoauditnetwork@gmail.com](mailto:yojoauditnetwork@gmail.com)

(Chennai \* Kumbakonam \* Karaikal)

### :CampusGreenery:

The college is completely covered with mature trees grown for more than 10 years. The total number of mature trees available in the college campus is 510 with 42 varieties of trees. Apart from the mature trees; preserving the ecology; the entire college campus is planted with various flowering shrubs and bushes.

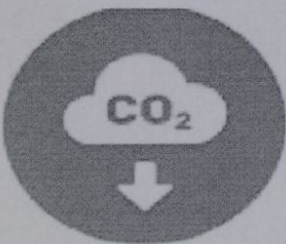


Total No. of Mature Trees available in the college campus is 510 which contributes for reduction of 20.4 Tons of CO<sub>2</sub> emission/Annum

Energy calculation

2- Calorific value of biogas is about 4,780 kcal/m<sup>3</sup> (i.e., 20 MJ/m<sup>3</sup>)

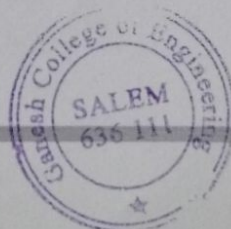
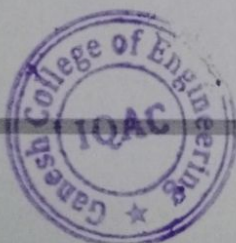
3- Calorific value of LPG is 11,500 kcal/kg



Annual savings of LPG is around 2,146 kg which reduces 5.6 Tons of CO<sub>2</sub> Emission/Annum.

### :Recommendations for Indoor Plants as Natural Air Purifier:

- Indoor plants not only do plants look good while bringing life to our living space, they also help purify the air, according to a NASA study that explains that even a small plant inside the work space can help remove at least three household toxins (think benzene, formaldehyde, and trichloroethylene, which are carcinogenic chemicals commonly found in stagnant indoor environments).



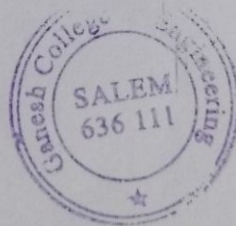
PRINCIPAL  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

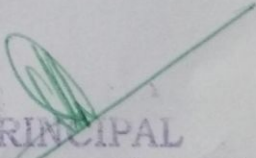
**:Bio-Diversity in the Campus:**

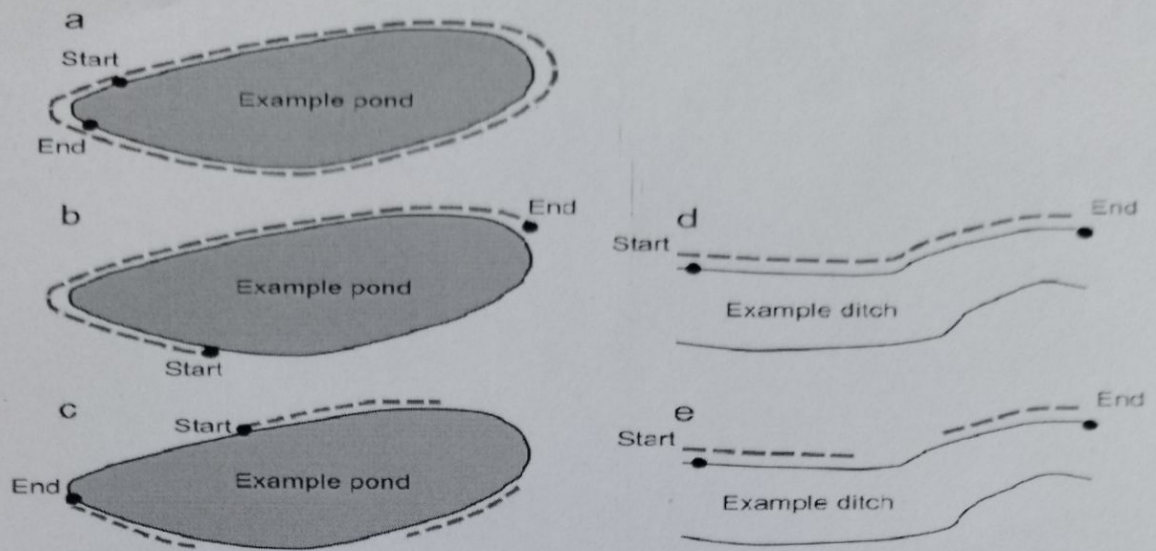
- Biodiversity is all the different kinds of life you'll find in one area the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world.
- Each of these species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life.
- Biodiversity support everything in nature that we need to survive: food, clean water and shelter.
- Ganesh College of Engineering, Salem campus is blessed with more varieties of resident birds (species always living inside the campus) and amphibians (Amphibians are small vertebrates that need water, or a moist environment, to survive).

**:Recommendations to maintain Bio-Diversity:**

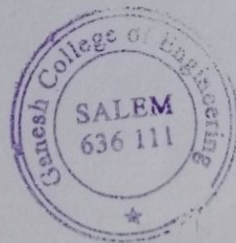
- **Bird Sighting and Survey:** Conduct a dedicated bird sighting and identify the list of birds both residing birds and migratory birds available in the college campus
- Prepare the list of birds with their local name, scientific name, their average life time, nesting facility created by the bird and photo of the bird. Show case the result to all the stake holder and inculcate a habit of friendly environment
- Discuss with the ornithologists and facilitate the environment with more birds coming to the campus and especially migratory birds.
- **Reptile & Amphibian survey:** Similar to bird survey; conduct a survey to list the amphibians available in the campus
- Amphibian and reptile surveys are often performed as part of the Green Audit process or terrestrial survey. These surveys are effective at detecting the presence of even the most elusive species.
- Since Ganesh College of Engineering, Salem campus has an excellent pond; it is highly recommend conducting the frog and toad survey around the pond and identifying the species.

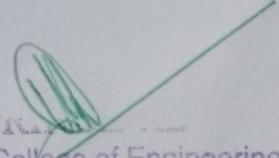


  
PRINCIPAL  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.



**Fig.7: Diagram illustrating approaches to conduct the survey at a water body**



  
 Ganesh College of Engineering,  
 Attur Main Road, Mettupatti,  
 SALEM-636 111.



# ENERGY, ENVIRONMENT & GREEN AUDIT REPORT

AUDIT CONDUCTED FOR

**GANESH COLLEGE OF ENGINEERING  
METTUPATTI, SALEM, TAMILNADU**



Learn. Rise. Excel

AUDIT CONDUCTED BY

YOJO NETWORK & TRAINING CENTER

(Registered Audit Agencies)

GST no: 33AYXPP0304R1ZT

(Chennai ♦ Kumbakonam ♦ Karaikal) Mobile:

+91-9047205733

E-mail: [yojoauditnetwork@gmail.com](mailto:yojoauditnetwork@gmail.com)



**YOJO NETWORK**





**YOJO NETWORK & TRAINING CENTER**

*(Registered Audit Agencies)*

*1st Floor, Devax Complex, Mull St*

*Kumbakonam - 612 001*

*Mobile: +91 9047205733*

*GST no: 33AYXPP0304R1Z1*

*E-mail: yojoauditnetwork@gmail.com*

*(Chennai & Kumbakonam & Karaikal)*

---

**ENERGY, ENVIRONMENT & GREEN AUDIT**

**REPORT**

**PART-C: GREEN AUDIT  
REPORT**

**WATER UTILIZATION,  
CONSERVATION &  
WATER MANAGEMENT**

---

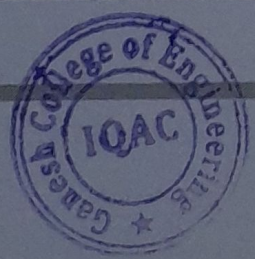


**1.3: Source of Water, Storage and Distribution:**

Table-11 shows the source of water, location of storage along with their application.

**Table-11: Source of Water, Location of Storage and Application**

Type of Water	Source	Application
Bore Water (Interconnected)	• Bore-1; East Side – 460ft	• Input to the RO plant
	• Bore-2; A-Block Back – 460ft	• Cooking Utensil Cleaning,
	• Bore-3; B-Block Front – 300ft	• Bathing & Cloth Washing
Rain Water (8 Nos) + One Pond	• Collected from i) buildings runoff and ii) road run-offs	• Used to increase the ground water level
	• Each building has one RWH	• Small pond is also available to Collect the rain water
Treated Water using RO Plant (2 Nos) from Bore and Well Water		• RO Water: Drinking and Cooking
		• Grey Water: Gardening & Toilet Cleaning (Good Initiative)
• Raw water tank capacity and Location	• Hostel – 10,000L (Cement)	• 10,000 Litres
	• Hostel – 10,000L (HPDE)	
	• A-Block – 10,000L (Cement)	• 10,000 Litres
	• B-Block – 10,000L (Cement)	• 10,000 Litres



**PRINCIPAL**  
 Ganesh College of Engineering,  
 Attur Main Road, Mettupatti,  
 Salem - 636 111.

- Allare tanksare cleanedmonthlyonce (Goodpractice).
- Waterfillingisnowinmanualoperation.

### 1.3: Treated Water for Drinking Application:

- The college management is keen on providing uninterrupted, safe and healthy drinking water to all; throughout the year.
- The overhead tanks storing the drinking water are cleaned at regular intervals and the water management team has been maintaining a cleaning schedule
- The specifications of RO Plant and distribution of potable water to the entire campus is given in Table-12.

**Table-12: Specifications of RO Plant and Potable Water Distribution System**

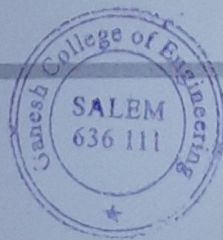
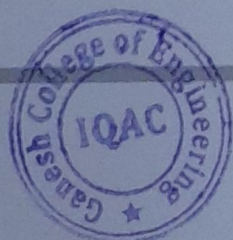
S.No.	Parameters	Description
1.	Total no. of RO Plant	• 03 No's (Total 1,000 LPH)
2.	Source of raw water	• Bore Water
3.	% of RO & grey water output	• 60 % RO water: 40 % grey water
4.	Usage of grey water	• Used for Toilet Cleaning (Good Initiative)
5.	Cleaning schedule of filter	• Once in three months (Replaced every year)
6.	Cleaning schedule of membrane	• Yearly twice
7.	Functioning of RO Plant	• Manual operation
8.	Quality of RO water	• Internally tested (50 TDS)
9.	RO water storage	• Stored in the HPDE tanks and distributed
10.	RO water tank capacity & location	• A Block - 1000 Litre & Hostel - 1000 Liter

### 1.3: Water Savings in Foreign Toilets:

The list of availability of Indian & Foreign style toilets are represented in the below Table-13.

**Table-13: List of Indian & Foreign Style Toilets**

S.No.	Location	No. of Toilets	
		Indian	Western
1.	A Block	20	2
2.	B Block	20	2
6.	Auditorium Back Side	05	1
<b>Total=</b>		<b>45</b>	<b>05</b>

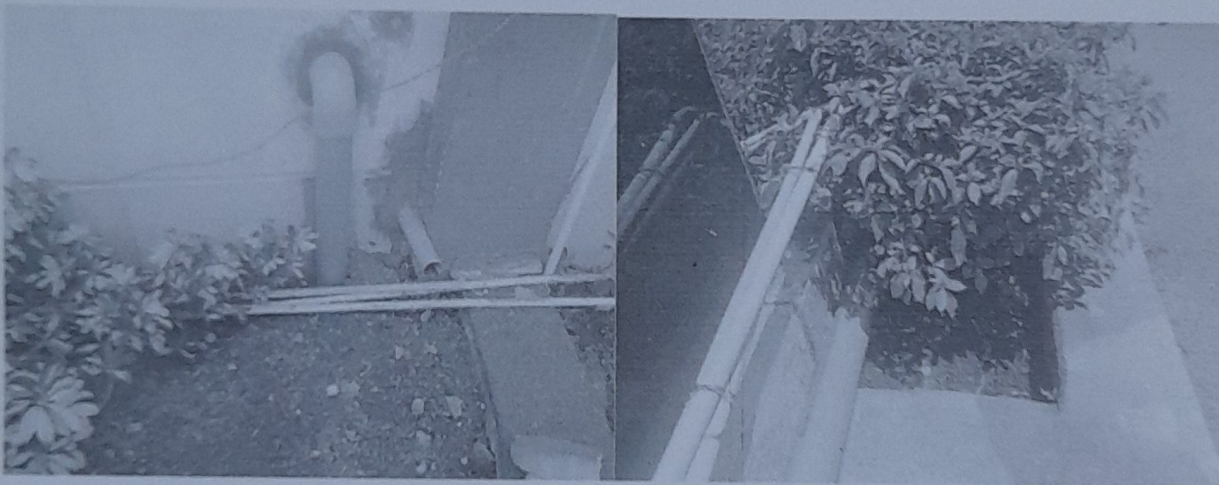


**PRINCIPAL**  
Ganesh College of Engineering,  
Attur Main Road, Mettupatti,  
SALEM-636 111.

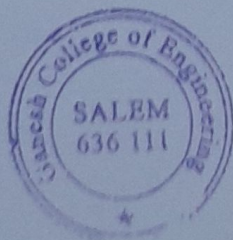
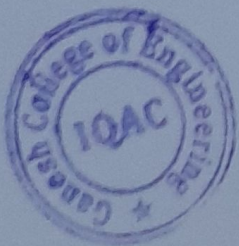
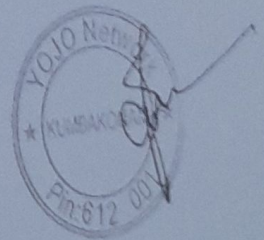
- In general the flush tank capacity may be 8 to 10 Liters (depends on make and model). Water savings also leads to power saving it saves the operating duration of the water pumps directly.

**1.3: Rain Water Harvesting (RWH) –from Building Roof Area & Run-off Area:**

- The audit team appreciates the effects taken by the management of Ganesh College of Engineering, Salem for harvesting the rain water almost in all buildings.
- The roof area is so arranged to collect the rain water and then passed through proper piping system, and then bring back to the RWH pits which are located close to each pits
- The building runoff are collected through each pits mostly located in each buildings. Common area and road run-off are properly collected and routed to nearby water body.



**Fig.4: Rain Water Harvesting (RWH) system & Water Body implemented in the College**



**PRINCIPAL**  
 Ganesh College of Engineering,  
 Attur Main Road, Muttupatti,  
 SALEM-636 111.