

4.1: Assessment of Annual Energy Usage:

Table-3 shows the types of energy carriers used for their regular operation in the college campus along with application area and their source.

Table-3: Energy Carriers, Application area and their sources used for College Operation

S. No.	Type of Energy Carrier	Application Area	Source of Procurement
1.	Electricity (LT Service)	Powering to all electrical / electronic / HVAC equipments	From TANGEDCO
2.	Diesel	Transport vehicles and Diesel Generator (Captive Generation)	From authorised distributor
3.	Liquified Petroleum Gas	Used only for cooking	
4.	Roof Top Solar PV Plant	20 kW connected to main building SSB feeding power generation	
5.	Mature Trees	The college has nearly 516 mature trees of different varieties which are more than 10 years old.	

4.2: Environmental System: CO₂ Balance Sheet (2020-21):

Environment audit is the best tool to assess the CO₂ emission and neutralization and chalk out the plans to reduce it from the present values. Table-4 provides the balance sheet indicating various energy carriers associated with the regular activities of the college and their CO₂ mapping.

Table-4: Environmental System: CO₂ Balance Sheet (2020-21)

S. No.	Annual Energy Consumption & CO ₂ Emission			Annual CO ₂ Neutralization		
	Description	Energy Usage	CO ₂ Emission (Tons)	Description	Energy Usage	CO ₂ Neutralized (Tons)
1.	Diesel	37,016 Litres	97.7	Solar PV	26,030 kWh	21.3
2.	Electrical Energy	67,470 kWh	55.3			
3.	LPG	2,925 kg	8.8	Mature Trees	775 Nos	16.9
4.	Total Emission		161.8	Total-Neutralized		32.6
Balance CO ₂ to be Neutralized = 129.2 Tons/Annum						

4.3: Calculation Table:

For Electricity = $\left[\text{kWh} \times \frac{0.82 \text{ kg of CO}_2 \text{ emission}}{\text{kWh}} \right]$
For Diesel = $\left[\text{Diesel Consumption (Litre)} \times \frac{2.64 \text{ kg of CO}_2 \text{ emission}}{\text{Litre of Fuel Consumption}} \right]$
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 matured tree can able to absorb nearly CO ₂ at a rate of 48 lbs./year (nearly 21.8 kg); hence total CO ₂ to be neutralized is $\frac{(21.8 \times 195)}{1,000} = 4.3 \frac{\text{Tons}}{\text{Annum}}$

4.4: References:

¹ <https://ecoscore.be/en/info/ecoscore/co2>

³ <http://www.tenmilliontrees.org/trees/#:~:text=A%20mature%20tree%20absorbs%20carbon,t he%20average%20car's%20annual%20mileage>

**CERTIFICATE FOR ENVIRONMENTAL AUDIT PROCESS**

This is to certify that, we have conducted an **ENVIRONMENTAL AUDIT** in P.A. COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS), Pollachi, Tamil Nadu 642 002, India on 22 JUNE 2021. This audit process highlights the **energy balance sheet** indicating various energy carriers associated with the regular activities of the college and their CO₂ mapping.

S. No.	Annual Energy Consumption & CO ₂ Emission			Annual CO ₂ Neutralization		
	Description	Energy Usage	CO ₂ Emission (Tons)	Description	Energy Usage	CO ₂ Neutralized (Tons)
1.	Diesel	37,016 Litres	97.7	Solar PV	26,030 kWh	21.3
2.	Electrical Energy	67,470 kWh	55.3			
3.	LPG	2,925 kg	8.8	Mature Trees	775 Nos	16.9
4.	Total Emission		161.8	Total-Neutralized		32.6
Balance CO ₂ to be Neutralized = 129.2 Tons/Annum						

Systems Audited:

• Electricity Consumption	• Usage of Chemical, Salts & Acids
• Diesel Consumption (Transport + DG)	• Cleaning Agents
• LPG Consumption	• RO Plant and Water Distribution System
• Solid and E-Waste Handling & Management	• STP and Waste Water Utilization

Note:

- Audited and Accounted from June-2020 to May-2021
- The detailed analysis of the Environment Study are presented in the Audit Report.

Audit conducted and verified by,

(Dr. S.R. SIVARASU)

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