

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE

(Autonomous Institutions -Affiliated to Bharathiar University)

ISO 9001:2015 Certified and Re-Accredited with B Grade by NAAC



POLLACHI – 642001,
TAMILNADU, INDIA



ENVIRONMENTAL AUDIT

AUDIT/REPORT BY



ALCHEME GREEN ENERGY COMPANY

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ACKNOWLEDGEMENT

We at Alcheme Green Energy Company, Madurai are thankful to the Principal for giving us the opportunity to carry out Environmental audit of Nallamuthu Gounder Mahalingam College , Pollachi -642 001, Tamilnadu, India. Alcheme Green Energy Company team is also thankful to all other supporting Officers / Staffs of the above institute for their wholehearted support, hospitality and the courtesy extended to the Audit team during the course of the visit.

The following officers from Alcheme Green Energy Company under the guidance of Mr. C. Jebaraj, B.Tech., have carried out the Environmental Audit.

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The following staff from the Institution were participated in the audit process

Name	Qualification	Designation
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Summary of Environment Audit

Environment audit of Nallamuthu Gounder Mahalingam College and its Hostel was carried by Alcheme Green Energy Company. Audit team has gone through the data related to Water and Electrical Energy, Waste generation , Waste Management, Waste Recycling and Reuse, Green Belt Development of the Institution both inside and outside the campus. The team also carried out the study of Pollution abatement measures, Rainwater harvesting, Water and Energy Conservation measures taken to reduce the pollution, noise level, Green house emission and maintain Ambient Air quality

During the visit it is observed that cleanliness in the campus is well maintained through proper disposal of wastes, utilization of eco-friendly supplies and effective recycling program. The concept of eco-friendly culture is disseminated among the students through various seminars/workshops and community-oriented programs. The Institution strictly follows reduce, reuse and recycle method to limit energy usage and partially replace non-renewable energy sources with renewable energy resources. The environment audit report is a very powerful and valuable communications tool to use while working with various stakeholders who need to be convinced that systems and procedures in place are suited to cope with natural changes and modifications.

It is hoped that the results presented in the environment audit report will serve as a guide for educating the college community on the existing environment related practices and resource usage at the college as well as spawn new activities and innovative practices.

The audit outputs and recommendations are summarised as follows:

Noteworthy activities

- Clean , Green and plastic free campus
- Maximum utilisation of public transport system by students and staff for commutation is highly appreciable
- Rainwater Collection arrangement to open well
- Sewage treatment plant at Boy's Hostel
- Solar Water Heater system at Hostels and utilisation hot water at Hostel Kitchen

The audit outputs and recommendations are summarised as follows:

- Air pollution impact on Ambient Air quality is negligible since the quantity of fuel used for combustion in the institution is very less
- Noise levels inside the campus are within the prescribed limit.
- Lot of initiatives are taken to conserve Water and Energy by the Institution.
- Flow meters are to be provided for better water management
- Total water consumption for Nallamuthu Gounder Mahalingam College and Hostel –75 KL/Day
- Electrical Energy consumption from TNEB GRID alone –2,13,063 units (Less due to more number of on line classes because of Corona)
- Green House Gas Emission is 227.78 t CO₂e Total GHG emission
- Green House gas reduction due to grown up trees is 19.87 t CO₂ e
- Net Green House Gas emission is 207.91 t CO₂ e

We are happy to submit this detailed Environmental audit report to the Nallamuthu Gounder Mahalingam College



For Alcheme Green Energy Company
Madurai



1. Introduction

1.1 Environmental Policy

Nallamuthu Gounder Mahalingam College has well formulated Environmental Policy to guide all its activities.

The main objectives are as follows:

- To promote green growth ,create green jobs and maintain green infrastructure
- To execute “Reduce, Reuse, Recycle and Re- earth “ towards waste management, environmental protection and sustainable future
- To reduce potable water consumption
- To create environmental awareness among all the stakeholders of the institution
- To assess and regulate environmental practices of the institution periodically

The Institution vouchsafes:

- Its commitment to sustainability and environmental management
- It reiterates the stand that managing environmental issues is a high priority for the College
- Its commitment to prevent pollution and to continuously improve upon environmental protection.
- A commitment to create environmental awareness

2. WATER

2.1 Water Usage at Nallamuthu Gounder Mahalingam College

Total number of students studied during the academic year 2020-2021: 5388

Teaching & non-Teaching staff in the institution during the academic year 2020-2021:258

Total number of stake holders: 5646

Water for college and hostel

Municipal water-34,000 litres/day

Borewell water- 41,000 litres/day

Total water usage -75, 000 litres/day

Main water uses in the College campus are Drinking, Rest room, Canteen and Lab

Water usage in the College- 47 KL / Day

Water usage per day per stakeholder in the college – 8.7 litres

Water usage at College

Sl. No	Place	Water usage Quantity Litres / Day
1	Drinking	6000
2	Rest room	24000
3	Canteen	6000
4	Lab	1000
5	Garden	10000
	Total	47,000

Waste water generation in the college – 31 KL/day

2.2 Water usage at Hostel

Number of students and staff residing in the hostel in the year 2020-2021: 300

Main water uses in the Hostel are Drinking, Washing of clothes, Cooking & Vessel cleaning and for Rest room

Water usage at Hostel - 28 KL / Day

Water consumption per day per stakeholder in the hostel – 93.3 litres

Water usage at Hostel

Sl. No	Place	Water usage Quantity Litres / Day
1	Drinking	600
2	Cooking	900
3	Rest room	7000
4	Bathing	7000
5	Clothes washing	7000
6	Vessel Cleaning	1000
7	Garden	4,500
	Total	28,000

Waste water generation in the Hostel – 22 KL /day

3. Electrical Energy

3.1 TNEB Grid Electrical Energy Consumption: 2020-2021

ELECTRICAL ENERGY CONSUMPTION IN THE COLLEGE AND HOSTEL

SL.NO		UNITS CONSUMED
1	COLLEGE	191573
2	HOSTEL	21490
	TOTAL	213063

3.2 Diesel Generator Electrical Energy Consumption: 14,850 units

Total electrical energy consumption

SL.NO		UNITS CONSUMED
1	TNEB	213063
2	DIESEL GENERATOR	14850
	Total	227913

Total Electrical Energy consumption from TNEB grid and DG in the College and Hostel 2,27,913 units

Electrical Energy consumption per stakeholder per year – 40.36 units/year

4. FUEL CONSUMPTION

4.1 LPG

LPG gas is used in the hostel for cooking and used in the college lab for heating

LPG cylinders used- commercial cylinders of 19 kgs capacity

- LPG cylinders used- commercial cylinders of 19 kgs capacity
- LPG consumption in the hostel mess during the year 2020-2021- 78 cylinders
- LPG consumption in the college during the year 2020-2021- 1 cylinder.
- Total LPG consumption during the year 2020-2021- 1501 KGs(79 Cylinders)

5. Waste Generations and Management

5.1 Liquid and Solid Waste Generation

Waste water generation in the College - 31 KL /day

Waste water generation in the Hostel – 22 KL /day

College

- Biodegradable—<1kg/day

Office

- Non-biodegradable —< 0.1kg/day

College Canteen

- Biodegradable —< 1 kg/day
- Non-biodegradable —<0.5kg/day
- Aluminium foil —<0.1kg/day

Hostel

- Biodegradable(Food waste) - 10-15 kg/day
- Non-biodegradable – <0.5kg/day

Open area

- Biodegradable (Dry leaves)- 5-10 Kgs/Day

Plastic waste

- Less than 100 grams. per day

e-Waste

- Less than 300 kgs/year

5.2 Waste Management

5.2.1 Liquid waste Management

- Grey water from kitchen is used for gardening
- Sewage water from boys hostel is collected separately and treated in the waste water treatment plant and treated clear water is used for gardening



5.2.2 Bio-degradable waste management

- Bio-Degradable and non-biodegradable waste are collected in separate bins provided.
- Dry leaves are collected separately, dumped in the pits and converted into Bio fertilizer
- Every Year around 1000 Kgs Bio composts are produce



5.2.3 Plastic Waste Management

The college has been declared as a 'Plastic Free' zone.

- Use of polythene bags, plastic cubs and laminated papers are prohibited.
- Students and staff are advised to bring cloth bags
- All the stake holders are motivated to use stainless steel water bottles and lunch boxes.
- Plastic utensils in the stores, canteen and hostel kitchen are replaced with stainless steel plates, tumblers etc
- Plastic waste that comes in through lab equipment's package, empty chemical containers etc. are collected separately and disposed periodically for recycling.

Used Battery Management

- Used batteries are disposed through Buy back method

5.2.5 e-Waste Management

- All electronic machineries are purchased under Buy-Back agreement for proper disposal of e waste to recycler

5.2.6 Other Solid Waste Management

- Solid wastes generated from damaged furniture are sent to waste wood collection centre. Useful furniture and other wooden materials are made from the waste
- Glass wastes are disposed periodically through municipal waste collection system.

6. Pollution abatement measures

6.1 Waste Reduction

- ❖ Students are instructed not to waste paper while writing examinations.
- ❖ Reusing one side paper
- ❖ Where ever possible, printing on both sides of papers
- ❖ In order to reduce the use of paper the following initiative were taken by E - Governance
 - Attendance
 - Payment of fees
 - Submission of e-assignment through email
 - Digitalisation of Staff profiles and details about students
 - E – Circular through SMS, WhatsApp or Email
- Online Admission Process – Printing of applications reduced & submission of applications through admission portal.
- All inter department communications are through intranet
- Online exams are conducted to reduce the paper usage.

6.2 Waste Recycling

Recyclable papers are collected and kept and disposed as mixed waste to paper mills through authorized Vendors.

- The answer scripts after the publication of results are sent for recycling.
- e wastes are collected and sent to authorised recycler.

6.3 Waste Reuse

- Reuse one sided paper
- Reuse Envelopes

6.4 Waste to wealth

- Dry leaves are converted into bio fertilizer

6.5 Water Conservation initiatives

- Water taps are changed to push type to reduce the wastage of water
- Periodical preventive maintenance are carried out to avoid leakages

6.6 Energy conservation activities followed

- High volume Low Speed fans are provided in the auditorium
- Maximum utilisation of day lights at auditorium, hostel and colleges
- Staff and Students are made aware of using public transport system
- Individual vehicle usage is reduced to the minimum level
- Periodical maintenance and overhauling of generators is being carried out
- The fans, lights, air-conditioners and other electronic and electrical equipments are switched off when not in use.
- Lights and fans are switched off by the students whenever they are out of hostel rooms
- Replacing conventional electrical light fittings with energy efficient Light-Emitting Diode (LED) bulbs.
- Replacing old high energy consuming appliances with star rated energy efficient appliances.
- Computers are switched to sleep mode or hibernate mode automatically when not in use.
- At the end of every practical session, Computer monitors and UPS are switched off.
- Soft copies are maintained instead of hard copies, to reduce power consumption and paper.

7. Greenbelt Development

Nallamuthu Gounder Mahalingam College, Pollachi being located in the regime surrounded by agriculture based villages, naturally the institute is overwhelmed with the atmosphere of greenery. The Institution too does ever take meticulous efforts to maintain and retain the Nature given atmosphere with planting of new saplings. The campus is lush green with gardens, lawns and plants wherever there is open space

- The eco-friendly ambience of the campus is a noteworthy feature of Nallamuthu Gounder Mahalingam College
- Green belt is developed in all possible open area are being converted into greenery
- The Green Society is maintaining a medicinal garden plants which is spread over 450 sqft area. Around 40 numbers of medicinal plants are there inside the campus
- Special initiatives are taken by the Green Society and new saplings are planted every year. Altogether, there are 946 plants in the campus.
- The list of trees and the arrival of new saplings are recorded every year.

Routine Green Practices

- Every year, new tree saplings are planted inside the college campus.
- The Green campus drive is an initiative of the College to protect the environment.
- The Green Society of the college take special care to keep the campus neat and green.
- Environmental awareness programs are conducted regularly to spread the message of environment preservation.



GREEN BELT DEVELOPMENT

8.Rainwater Harvesting

At Nallamuthu Gounder Mahalingam College, rainwater harvesting is done effectively to enhance the ground water level. The institution has rainwater harvesting pits at various locations and they are being maintained properly. The water drained during the rainy season is allowed to flow into the pits constructed in various places inside the campus including the Hostel Premises.

Rainwater harvest area covered in the college -45,799 sqft

Rainwater harvest area covered in the hostel- 16,276 Sqft

In addition, all the rainwater from open floor area are collected through Rainwater collection channel and directed to open well



Excellent collection system for effective utilisation of rainwater

9. AMBIENT AIR

9.1 Green House Gas Emission

Release of carbon dioxide into the atmosphere is contributes to the global warming and increasing the pace of climate change. More trees in the campus will make a source of sink for the carbon dioxide and for other greenhouse gases

Average distance tavelled from home to College and back to home by four wheelers=16KM		
Average distance tavelled from home to College and back to home by two wheelers=12 KM		
Average Four Wheeler Fuel efficiency assumed = 20KM/ Lit		
Average Two Wheeler Fuel efficiency assumed = 60KM/ Lit		
No of cars used by both students and staff =18		
No of two wheelers used by both students and staff =750		
No of College working days(off line and online) during the year 2020-2021-125 days		
No of days teaching and non teaching staff came to college in the year 2020-2021 -91 days (Low Number of days because of Lockdown due to Corona)		
No of days Hostel was occupied with students in the year 2020-2021- 70 days		
Fuel (Petrol)consumption by two wheelers = No of days * No of vehicles*12/60	13650	lits
Fuel (Petrol)consumption by four wheelers = No of days * No of vehicles*16/20	1310.4	Lits
Total quantity of petrol consumed by both two wheelers and four wheelers	14960	Lits
Diesel consumed by college bus during the year 2020-2021	0	lits
Diesel consumed by DG sets during the year 2020-2021	4950	Lits
Total Diesel consumption during the year 2020-2021	4950	lits
LPG consumption in the college	19	kgs
LPG consumption in hostel mess and canteen	1482	kgs
Total LPG consumption	1501	KGS
Total Power consumed in the COLLEGE and HOSTEL in the year 2020-2021	213063	units
GHG EMISSION		
Green House Gas emission due to petrol	35306.54	Kge CO ₂
Green House Gas emission due to diesel	13216.50	Kge CO ₂
Green House Gas emission due to LPG	4548.03	Kge CO ₂
Green House Gas emission due to Grid power	174711.66	Kge CO ₂
Total GHG emission per year	227782.73	Kge CO ₂
Total GHG emission per year	227.78	t CO₂ eq
GHG Capturbed by tress		
Fully grown up trees inside the campus	946	trees
Green house gas captured by trees	19.87	t CO₂ eq
Net Green House Gas Emission per year	207.92	t CO₂ eq
GHG AVOIDED due to useage of Renewable Energy		
Solar power generation for street lights	438.00	units
Green house gas emission avoided due to solar power generation for street lights	0.36	t CO ₂ eq
Total Solar Water Heater installed	4100.00	LPD
Green house gas emission avoided due to Solar Water Heater for 70 days	16.64	t CO ₂ eq
Total GHG avoided by useage of Renewable Energy	17.00	t CO₂ eq

9.2 Ambient Air Quality

Flue gas emission sources

- LPG combustion at hostel, canteen and labs
- Diesel generator at College and Hostel

Fuel consumption per year

- LPG -1501 Kg
- Diesel for generator – 4950 litres

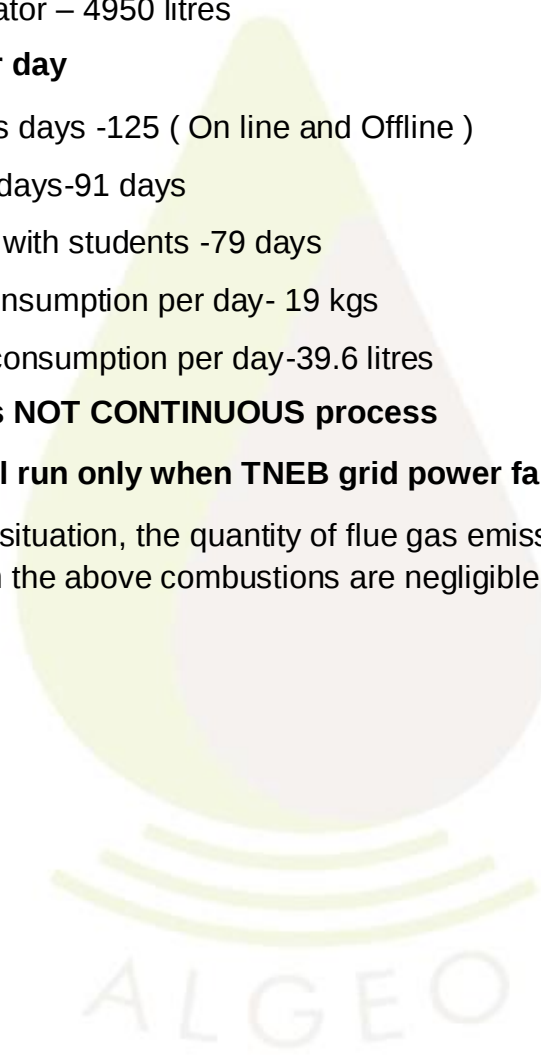
Fuel consumption per day

- College workings days -125 (On line and Offline)
- Off line working days-91 days
- Hostel occupied with students -79 days
- Average LPG consumption per day- 19 kgs
- Average diesel consumption per day-39.6 litres

Combustion of LPG is NOT CONTINUOUS process

DIESEL Generator will run only when TNEB grid power fails

Considering the above situation, the quantity of flue gas emission and the impact on ambient air quality from the above combustions are negligible



9.3 Noise level

Noise level inside the campus

Sl. No	Location	Max value in dB	Average Value in dB
1	Near Main Entrance	74.8	65.4
2	Class room	57.3	54.9
3	Library	52.1	48.7
4	Near DG	62.3	59.4
5	Hostel	57.5	52.1
6	Office	59.4	57.8

- Diesel Generators (DG) sets do not run on a continuous basis. Only during power failure, DG sets are operated during the working hours of the College.
- Generally Power failure occurs for a very short time period.
- During planned shutdown hours, DGs run continuously based on the load
- Noise disturbance due to DG set is negligible.

10. Audit Findings & Recommendations

Noteworthy activities

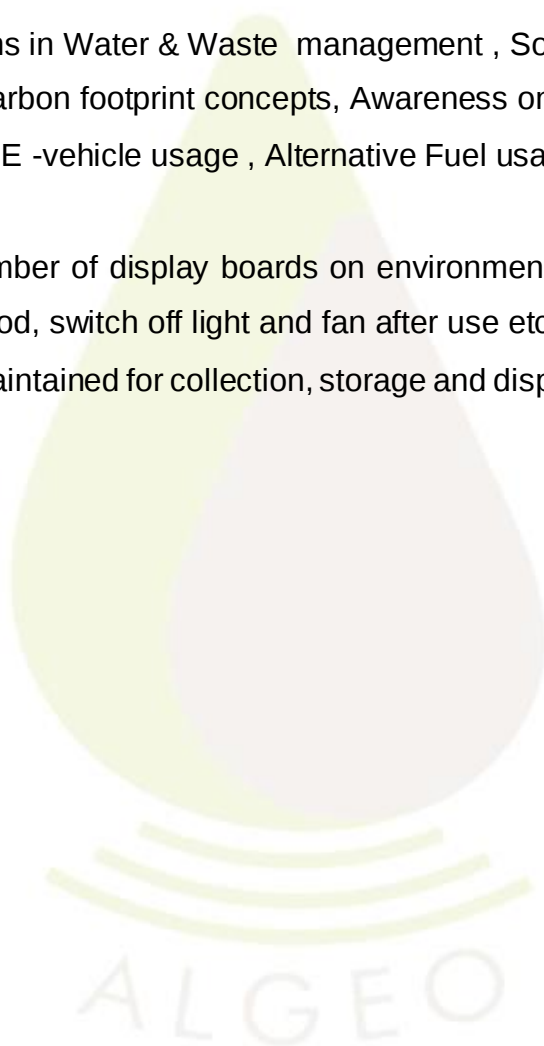
- Clean , Green and plastic free campus
- Maximum utilisation of public transport system by students and staff for commutation is highly appreciable
- Optimum utilisation of Water
- Sewage Water Treatment at Boys' Hostel
- Hot water from Solar water heaters are utilised in the Hostel Kitchen to reduce the LPG consumption

Findings

- Air pollution impact on Ambient Air quality is negligible since the quantity of fuel used for combustion in the institution is very less
- Noise levels inside the campus are within the prescribed limit.
- Lot of initiatives are taken to conserve Water and Energy by the Institution.
- Flow meters are to be provided for better water management
- Total water consumption for Nallamuthu Gounder Mahalingam College and Hostel –75 KL/Day
- Electrical Energy consumption from TNEB GRID alone –2,13,063 units (Less due to more number of on line classes because of Corona)
- Total Green House Gas (GHG) emission is 227.78 t CO₂e
- Green House gas reduction due to grown up trees is 19.87 t CO₂e
- Net Green House Gas emission is 207.92 t CO₂e
- Tree cover of the college with respect to the stakeholder strength is excellent
- Regular planting of trees inside campus are to be continued
- Water usage per day per stakeholder in the college -8.7 litres.
- Water consumption per day per stakeholder in the hostel -93.3 litres
- Electrical Energy consumption per stakeholder per year – 40.36 units/year (less due to more number of on line classes)

Recommendations

- Electrical Energy reduction through Solar PV Power Plant Shall be planned
- Flow meter to be installed at borewell water pump discharge to know the exact usage of water.
- Waste water generated from college rest room shall be separated as grey and septic water and grey water shall be used for garden or reused for toilet flushing after treatment
- Training programs in Water & Waste management , Solids and e-Waste Management, Carbon footprint concepts, Awareness on Global warming & Climate change, E -vehicle usage , Alternative Fuel usage , Renewable Energy
- Increase the number of display boards on environmental awareness such as no wastage of food, switch off light and fan after use etc
- Register to be maintained for collection, storage and disposal of E waste & used batteries





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Coimbatore -25-02-2022

To
 THE PRINCIPAL
 NGM COLLAGE
 Palghat road
 Pollachi- 642001

TEST REPORT

REPORT NO:	GES/10118/2022	REPORT DATE:	25-02-2022
Company Name and Address			
Sample Reference No	GES/WTP/22/W-16713		
Customer Reference	WELL WATER		
Sampling Procedure	IS 3025 Part-1		
Sample Collected BY	Customer		
Sample collected date	25-02-2022		

Parameters	UNIT	RESULT	DRINKING STDS (IS 10500:2012)
PH at 25 °C	:	7.18	6.5-8.5
Turbidity	NTU,Max	0.01	5
Total dissolved solids	mg/l	147	2000
Total Hardness	mg/l	90.7	++
Magnesium (as Mg)mg/lMax	mg/l	11.0	100

Branch Office : Door No. 179/ 5,6,7, 1st Floor, Kaliyammal Street, (Opp. Corporation Park,) K.K. Pudur (P.O.), Saibabacolony,
 Coimbatore - 641 038. Cell : 97894 62617 E-mail : durai_2004@rediffmail.com

Odour	mg/l	Agreeable	Agreeable
Total alkalinity as CaCO_3	mg/l	80.5	600
Zinc	mg/l	0.5	15
Sulphates as SO_4	mg/l	98.1	400
Nitrate as NO_3	mg/l	18	No relaxation
Fluoride as F	mg/l	BDL	1.5
Free residual chlorine as CR	mg/l	BDL	1.0

Remarks :

SUGGESTION – The water can be used for drinking purpose.

Approved by: GLOBAL ENVIRO SYSTEMS P.DURASAMY .Msc PhD (ENVIRONMENT CONSULTANT)

Chemist: G VINOTH

G. Vinoth

P. Duraisamy
P.DURASAMY

Note:

.BDL –Below Detectable Limit\< 0.001mg/l

.The test results only to the items received & tested

.The test report shall not be reproduce anywhere except in full and in the same format without the permission of the laboratory.

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