

ENVIRONMENTAL AUDIT

2019



SREEPATHY INSTITUTE OF MANAGEMENT & TECHNOLOGY

VAVVANOOR, PATTAMBI
PALAKKAD

EXECUTED BY



ATHUL ENERGY CONSULTANTS PVT LTD

4th FLOOR, CAPITAL LEGEND BUILDING,
KORAPPATH LANE, ROUND NORTH, THRISSUR, KERALA-680020
Ph: +91 735611199/0-6 Web: www.athulenergy.com E-Mail: info@athulenergy.com

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ACKNOWLEDGEMENTS

We express our sincere gratitude to the management of Sreepathy Institute of Management and Technology (SIMAT) for giving us an opportunity to carry out the project of Environment Audit. We are extremely thankful to the SIMAT for their support to carry out the studies and for input data, and measurements related to the project of Environment audit.

SIMAT

- | | | |
|---|-----------------|-----------------|
| 1 | Dr. Gerorge C T | Principal |
| 2 | Mr. Renjith PC | Asst. Professor |
| 3 | Mr. Suhas.M | Lab Instructor |

Also congratulating our Environment audit team members for successfully completing the assignment in time and making their best efforts to add value.

Environment Audit Team

- 1. Mr. Santhosh A**
Registered Energy Auditor of Bureau of Energy Efficiency (BEE – Govt. of India)
Accredited Energy Auditor No – EA 7597
- 2. Mr. Ashok KMP**
Registered Energy Manager of Bureau of Energy Efficiency (BEE – Govt. of India)
Energy Manager No – EA 25612, Griha Professional
- 3. Ms. Jijiraj K R**, Project Engineer, B-Tech – Electronics and communication.
- 4. Mr. Harikrishnan K**, Project Engineer, B-Tech - Production Engineering.



Yours faithfully

Managing Director
Athul Energy Consultants Pvt Ltd

EXECUTIVE SUMMARY

Waste management:

- The biodegradable wastes are fed in to the biogas plant which uses for the canteen. The capacity of the biogas plant is 3 m³.
- Incinerator provided to dispose the non-biodegradable waste which burns in the range of 800 to 1000 °C to reduce the emission of dioxin and furans

Suggestions for Improvement.

- Internal inspection team to be formed which comprises of staff and students.
- Introduce 'refuse plastic' concept among college for inventories. This will spread among students and staffs and percolate into their behaviour.
- Segregation and collection of wastes done on every month and record the same which will be an eyeopener and we can control on that data basis.

GENERAL DETAILS

The general details of the SIMAT is given below in table based on the data availed from the college, in between the Jan 2019 to Dec 2019. The data based on the electricity bill, solar and diesel generated units, human resources and finance department of the college.

SL. NO	PARTICULARS	DETAILS
1	Name & Address	Sreepathy institute of Management & Technology Vavvanoor, Koottanad Pattambi, Palakkad Dist - 679533 Ph: 0466 2370200
2	Contact person	Dr. George CT, Principal
3	No. of Employees	110
4	Building area (m ²)	14420
5	Number of students (Nos)	640
7	Annual Diesel Consumption (Litres) (Transport + DG)	32293.71
8	Annual Diesel generated units (kWh) (DG)	6559
9	Annual Electricity Consumption (KSEBL)	51594
10	Solar generated units (kWh)	35000
11	Contract Demand (kVA)	100
12	Maximum Demand (kVA)	63.68
13	Average Power factor	0.91

TABLE 1: GENERAL DETAILS

DESCRIPTION OF SITE

Sreepathy Institute of Management and Technology (SIMAT) is the offspring of the Sreepathy Trust which is formed with the collective participation of dedicated technocrats, engineers, industrialists, philanthropists and individuals having the common goal of establishing a platform to promote quality higher education and research avenues in professional disciplines like technical and engineering subjects, medical and paramedical, management studies, agriculture, biotechnology and cultural disciplines in order that the deserving cross section of the society irrespective of their cast, colour and creed are provided with an opportunity to groom.

The devoted teaching faculty of SIMAT with consistent academic records is headed by a qualified, talented and professional Director to excel in all sphere of the institution activities. The institution has put in place the state-of-the-art infrastructure and laboratory facilities to enrich the student's academic profiles. SIMAT Faculty members include PhD holders and academically proven Postgraduates who enjoy the working environment well besides availing the pay and benefits which are at par with AICTE guidelines. The college is approved by AICTE and affiliated to APJ Abdul Kalam Technological University and Calicut university.

The college provides the following engineering courses with state-of-the-art facilities.

- Civil engineering
- Electronics and communication engineering
- Mechanical engineering
- Computer science and engineering
- Electrical and electronics engineering



LAYOUT



FIGURE 1: GOOGLE LAYOUT

ENVIRONMENT AUDIT

1. OBJECTIVES

The ICC defines Environmental Auditing as: “A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects.”

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues. Environmental conditions may be monitored from angles that are relevant to Indian requirements, without stress on legal issues or compliance. This innovative scheme is user friendly and totally voluntary. The environmental awareness helps the institution to set environmental examples for the community and to educate young learners.

One of the main trust areas in the institution is Waste management. Here we can mainly divide into as activity from the college and student initiatives to the social environment.

2. WASTE MANAGEMENT

Waste is generally termed as ‘a resource at the wrong place’. The college authorities are aware of the possible methods and have installed waste management measures like biogas systems. The waste clearance measures associated with different types of wastes are briefly given below.

In an college normally three types of wastes are generated and we can divide the same as Bio degradable , Non bio degradable and E-waste .

Biodegradable wastes

Biodegradable waste includes any **organic matter** in **waste** which can be broken down into carbon dioxide, water, methane or simple organic molecules by micro-organisms and other living things by **composting, aerobic digestion, anaerobic digestion** or similar processes. In waste management, it also includes some inorganic materials which can be decomposed by bacteria

These materials are non-toxic to the environment and mainly include the natural substances only. Plants and animals waste, even the dead plants and animals, fruits, paper, vegetables, etc. get converted into the simpler units, which further get into the soil and are used as manures, biogas, fertilizers, compost, etc.

The biodegradable wastes are mainly from the college canteen. The bio-slurry is used as manure to the plantation.

College Canteen: It is found that around 5-10 kg of biodegradable food waste is available per day and is fed in to. **Biogas plant:** The biogas plant converts food wastes into methane gas and usable bio fertilizers which will be used for plants. The methane gas from the biogas plant is used in the canteen for cooking purpose and for heating drinking water hot water. Approximately 2 to 3kg of LPG is saved by using biogas plant. The bio manure from the biogas plant is used for gardening, agriculture and for trees. This biowaste also acts as the best bio insecticide and thus the college avoided the usage of environmentally toxic pesticides for the environment.

- ❖ Other wastes like those from the toilets are disposed through a septic tank at locations situated away from water sources.



FIGURE 2: BIO GAS PLANT

Here the college is using a portable Fiber Reinforced Plant for treating bio waste. The slurry coming from the plant is collected in drums and reused after diluting with water for agriculture and for gardens. The methane gas is used by using a separate bio gas stove in the canteen for heating cold water to hot water which is used for drinking and tea making.

Non-biodegradable waste

Non-recyclable wastes are collected and burned once in a month using incinerator places inside the campus itself. The recyclable wastes are sorted out into categories and supplied it to the collecting units.

Materials that remain for a long time in the environment, without getting decompose by any natural agents, also causing harm to the environment are called non-biodegradable substances. These materials are metals, plastics, bottles, glass, poly bags, chemicals, batteries, etc. But as these are readily available, convenient to use, and are of low cost, the non-biodegradable substances are more often used. But instead of returning to the environment, they become solid waste which cannot be broken down and become hazardous to the health and the environment. Hence are regarded as toxic, pollution causing and are not considered as eco-friendly

. Many measures are taken these days, concerning the use of non-biodegradable materials. The **three 'R'** concept which says **Reduce-Recycle -Reuse** is in trend, which explains the use of the non-biodegradable materials. As we already discuss that these substances do not decompose, or dissolve easily so can be recycled and reuse. And one can help in reducing this waste by instead of throwing the plastics and poly bags in the garbage; it can be put in the recycling bags to use again.



FIGURE 3: INCINERATOR

Incinerator is used for incinerating the non-bio degradable wastes which is under repair for changing of refractory bricks and for increasing the chimney height for increasing the natural draught.

Electronic waste: Electronic waste or e-waste describes discarded electrical or **electronic devices**. E-waste or electronic waste is created when an electronic product is discarded after the end of its useful life. The rapid expansion of technology and the consumption driven society results in the creation of a very large amount of e-waste in every minute. Used electronics which are destined for refurbishment, reuse, resale, salvage recycling through material recovery, or disposal are also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environment pollution. Certain components of some electronic products contain materials that render them hazardous, depending on their condition and density.

- **Reduce** your generation of e-waste through smart procurement and good maintenance.
- **Reuse** still functioning electronic equipment by donating or selling it to someone who can still use it.
- **Recycle** those products that cannot be repaired. Computer monitors, televisions and other electronic equipment should NOT be disposed of with regular garbage, as this is illegal in California. To find an organization that will manage your electronics for recycling.

Activity: With keeping view to minimize the pollution created through the e-waste, we have carried out the scientific disposal of e-waste by two ways 1) Collection of e-wastes in e-waste box and sale it to concerned firm for its disposal. 2) Reuse of the component of unused electronic devices in laboratory

The college e-waste mainly of damaged computer parts. The auditors found that they are stored safely in a building room. These E wastes are collected by the agencies for recycling.

Other activities of college for waste management

Dustbins on the premises

In our college campus all the laboratories, cabin and corridor are having dustbins. Laboratories are having separate dustbins for dry and wet wastage. The use of dustbins maintains garbage free campus. E.

No uses of plastic in canteen

Our canteen uses paper plates, newspapers, utensils to control the use of plastic on the college campus. It has helped in keeping the campus plastic free.



FIGURE 4: WASTE SEGREGATION

3. STUDENT ACTIVITIES

- ❖ **Swachhtha Hi Seva- Plastic waste free Campaign:** As per the directions from Ministry of Human Resource Development (MHRD), Govt of India regarding Plastic waste free campaign (Swachhtha Hi Seva 2019), the NSS unit of SIMAT organized an intensive plastic removal campaign at the college campus. The program generated awareness among students, about the impact of plastic waste on earth. More than 50 volunteers participated in the campaign. Mr. Sarath Sankar K S (Asst. Professor, ME) and Mr. Syam Prasad G (NSS Programme Officer) gave awareness and directions for volunteers.
- ❖ **Gandhi Jayandhi:** On the 150th Gandhi Jayandhi., NSS volunteers conducted Swatch Bharath and plastic removal activities. The volunteers also prepared a vegetable garden inside the campus. About 30 volunteers participated in the activities. Mr. Crecentine J K (Asst Professor, ME Department) guided the volunteers.



FIGURE 5: PLASTIC FREE CAMPAIGN




FIGURE 6: GANDHI JAYANTHI DAY CLEANING CAMP

Bio gas plant: For treating the bio degradable food wastes from college and hostels canteens. The biogas plant converts food wastes into methane gas and usable bio fertilizers which will be used for plants.




ANNEXURE - 1

 **BUREAU OF ENERGY EFFICIENCY**

Examination Registration No.: **EA- 7597**

Accreditation Registration No.: **AEA-0275**



Certificate of Accreditation

This is to certify that Mr./Ms..... **Santhosh. A**having its trade/registered office at **Kerala** has been given accreditation as accredited energy auditor. The certificate shall be effective from ...**2nd**... day of **November, 2017**.....


The certificate is subject to the provisions of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010.

This certificate shall be valid until it is cancelled under regulation 9 of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010.

On cancellation, the certificate of accreditation shall be surrendered to the Bureau within fifteen days from the date of receipt of order of cancellation.

Your name has been entered at AEA No. **0275**..... in the register of list of accredited energy auditors. Your name shall be liable to be struck out on the grounds specified in regulation 8 of the Bureau of Energy Efficiency (Qualifications for Accredited Energy Auditors and Maintenance of their List) Regulations, 2010.

Given under the seal of the Bureau of Energy Efficiency, Ministry of Power, this **12th** day of **February, 2018**


Secretary,
Bureau of Energy Efficiency
New Delhi



Energy Management Centre - Kerala
(Department of Power, Govt of Kerala)

CERTIFICATE OF EMPANELMENT

This is to certify that **M/s. Athul Energy Consultants Pvt Ltd** (4/2, Capital Legend, Korapath Lane, Round North, Thrissur – 680 020) is empanelled as Energy Audit firm in Energy Management Centre Kerala to conduct mandatory energy audit as per Government of Kerala G.O (Rt) No.2/2011/PD dated 01.01.2011.

Empanelment No:
EMCEEA- 0811F-2

Scope/Area	Building	Industry -Electrical	Industry Thermal
	Yes	Yes	Yes

This empanelment is valid up to 20th December 2020

Issuing Date: 01/01/2018

Place: Thiruvananthapuram

Director,
Energy Management Centre Kerala



CERTIFICATE



Ministry of New and Renewable Energy
Government of India



GRIHA Council



The Energy and Resources Institute

This is to certify that

Ashok K M P

of

Athul Energy Consultants Pvt Ltd, Thrissur

has qualified as

GRIHA Certified Professional

on

01st August 2018

Sanjay Seth
Chief Executive Officer
GRIHA Council

Note: This certification is valid for a period of 2 years from the date of qualification (exam).



http://community.grihaindia.org/blocks/verify_certificate/index.php?certnumber=fyiPq2Q5JA

@GRIHA Council



CERTIFICATE OF CALIBRATION

ULR - CC232618000001494P

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Ref. No.: ET/190522G/01

Applicant: Athul Energy Consultants Pvt. Ltd., Trissur.

Device Calibrated : **Power Quality analyser with current probes.**
Make / Model: Krykard/ALM 35 Sl.No.: 214353

Date of Receipt: 22-May-18
Condition at receipt: Functional
Calibrated at: Inhouse
Date of Calibration: 24-May-19
Calibration due date: 24-May-20

Certified that the above instrument has been calibrated by trained technical personnel of this centre using a calibration system traceable to National Standards. The calibration details attached with the certificate are authentic quantitative analysis of the instrument's credibility on the date of calibration and relate only to the instrument calibrated.

Date of Issue: 31-05-2019

Lab in charge:
SANGEETHA PAI

Approved Signatory
Dr. J. JAGANNATH BHAT

Note:

- This certificate and report shall not be reproduced except in full without the written approval of this Centre.
- This instrument is calibrated for part of the range only.



STIC

SOPHISTICATED TEST & INSTRUMENTATION CENTRE
(An autonomous Institution established by the Govt. of Kerala in collaboration with Cochin University of Science & Technology)

Kochi University P.O., Kochi - 682 022, Kerala, India
Tel.: 91887 06697, +91 484 2575908, 2576697 Fax: +91 484 2576699
e-mail: stic@vsnl.com, ets@sticindia.com Web site: www.sticindia.com



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