

Green Audit Report

On



JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS, Affiliated to JNTUH, Narsampet, Warangal (R), 506 332)

FEB 2022

Submitted by



SRI GAYATRI ENERGY SERVICES

we support you conserve

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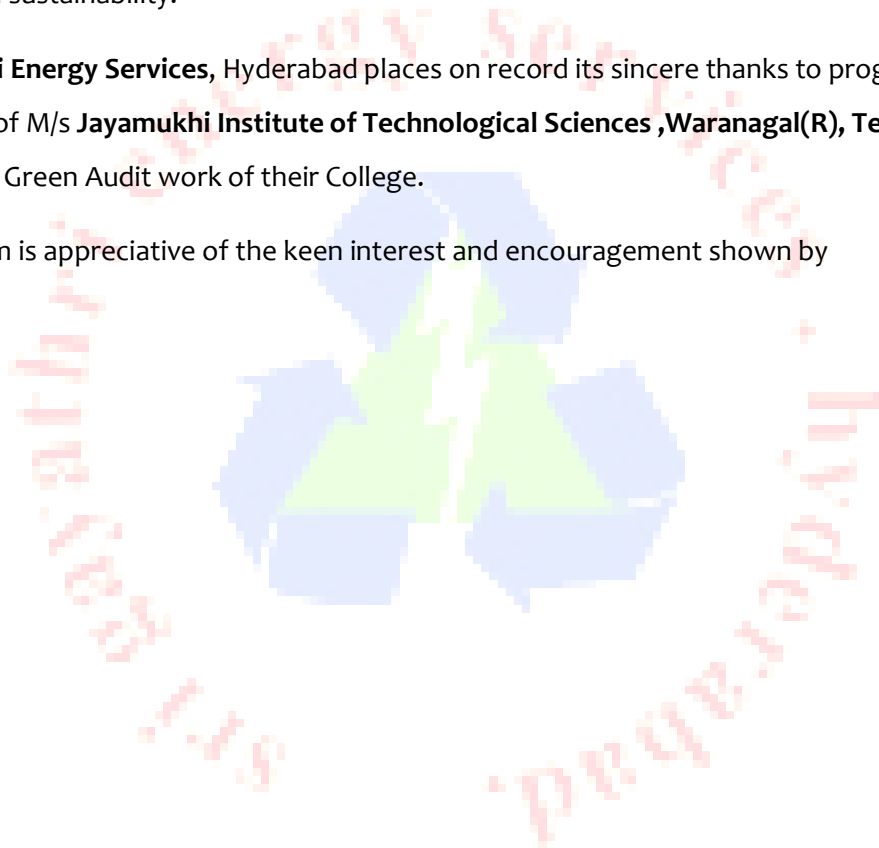
Introduction of Green Audit

Acknowledgement

The Green audit conducted is an external audit that aims towards creating awareness healthy and sustainable environment. Though nascent, the initiative is taken up to foster the concept of environmental sustainability.

M/s **Sri Gayatri Energy Services**, Hyderabad places on record its sincere thanks to progressive management of M/s **Jayamukhi Institute of Technological Sciences ,Waranagal(R), Telangana** for entrusting the Green Audit work of their College.

The study team is appreciative of the keen interest and encouragement shown by



Disclaimer

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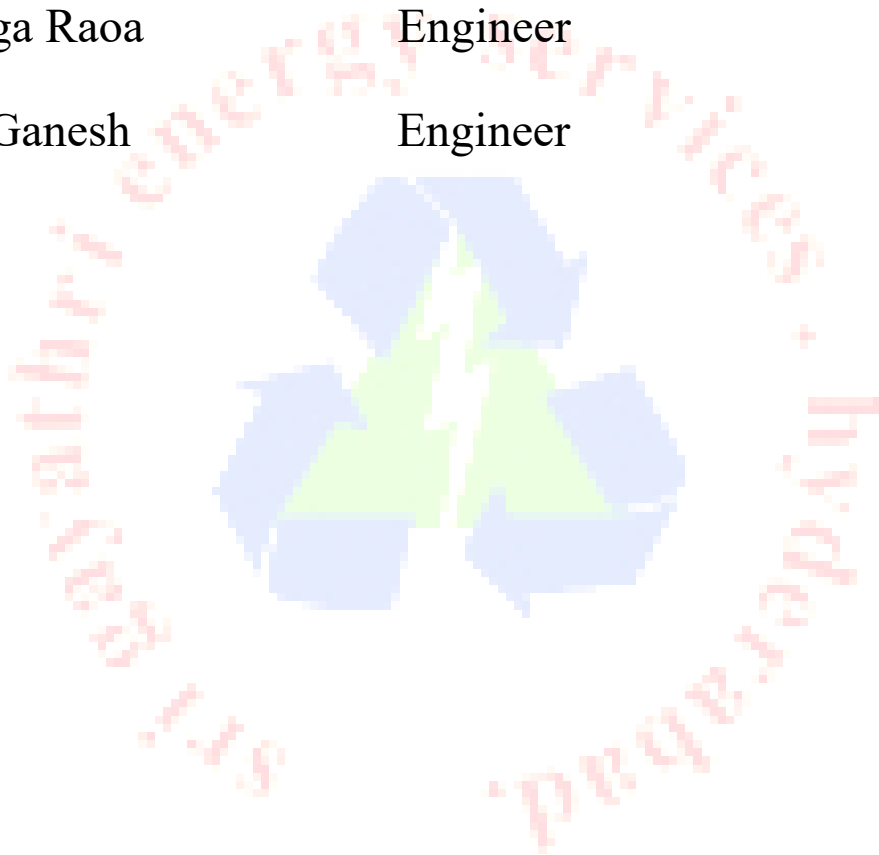
We trust the data provided by the M/s **Jayamukhi Institute of Technological Sciences, Warangal(R)**, Telangana personnel is true to their best of knowledge and we didn't verify the correctness of it.

Audit Study team

Shri D.S.R.Murthy Senior Energy Auditor

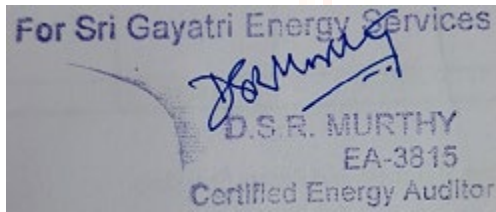
Shri Durga Rao Engineer

Shri Sai Ganesh Engineer



CERTIFICATE

We here by certify that we carried out Green Audit in the M/s **Jayamukhi Institute of Technological Sciences**, Telangana during 19 FEB 2022 and following Observations were presented below. The Management is pro active towards Green Initiative by Harvesting, Solar Energy, Planting Trees, Better water conservation, Waste Management, Carbon Foot Print; A continual improvement in Green Initiative is appreciated. We appreciate the efforts of the M/s **Jayamukhi Institute of Technological Sciences, Waranagal**® Telangana in this regard.



Executive Summary of Observations

1. A Detailed Green Audit is carried out at the Campus with following observations.
2. The plantation of Trees is a continual process which is under implementation the total green area coverage is 59398.367 Sq M which is mandatory for mitigating the Global warming.(Photos enclosed)
3. The Campus is having 100 KWp Grid Connected Solar PV Plant , It is recommended to enhance further 50 KWp capacity .
4. It is recommended to rectify / repair the leaky taps and construct the water harvesting pits
5. Waste Management is segregated in to three categories like
 - i) Bio Degradable Waste (Food Waste)/(Paper Waste) It is proposed to install a Biogas plant in the campus to generate Bio gas and can be used for cooking in the campus itself .
 - ii) Paper waste is collected in dust bins and disposed to scrap merchant
 - iii) Non Bio Degradable Waste (Plastic/ Other) are collected in the dust bins located at various locations in the campus. It is proposed to Ban/ discourage the usage of plastic water bottles inside the campus (Enclose Photos of Dust bins). The Waste is picked up by vendor
 - iv) E Waste Management MOU is signed with GHMC for picking up the E waste generated annually and dispose the E waste in eco- friendly way .(Enclose copy of MOU)
6. It can be concluded that the Green Audit initiatives are started and College Management recognized the importance and taking proactive steps towards sustainable environment.
7. It is proposed to install “Agnisumukh ” for improving the burner and fuel efficiency .(Details are given in Annexure)

Green Audit scope of work

The Green Audit is carried out in view of assessing all necessary environmental components and their impact on the campus physically by visiting the premises with reference to following.

1. Identifying the Green Area in total area of the campus and process of planting trees so that Heat /Global warming are mitigated. Creating awareness among staff/Students for planting more trees in the campus. A continual drive is created.
2. Water Conservation/ Efficient Usage / Eliminate the water misuse or wastage , Rain Water Harvesting etc
3. Renewable Energy usage to reduce the fossil fuel dependency, Harvest the Solar Power
4. Waste Management which includes Bio Waste/ Non Bio Waste/ E Waste etc
5. Carbon Foot Print – Transportation of Teaching Staff / Non Teaching Staff/ Students

METHODOLOGY

The Green Audit taken up by the college had been divided into two stages:

The Audit Stage: The Audit Stage encompasses of the team selection and the field works to be performed. The Green Audit Team focused on various Issues pertaining to college which have the highest influence on the Green Attributes of the College. The Audit stage also focused on the Methodology adopted. Checklist approach is adopted for transparent evaluation of the topics and increase readability for independent reader.

The Post Audit Stage: The post-audit stage ensures formulation of Draft findings and sent to management response. After getting draft approval, the audit team went for final report formulation.

Project Schedule:

- | | |
|----------------------|------------|
| 1. Audit | : 1-2 days |
| 2. Report generation | : 1 Week |

Introduction of the Institution

Sponsored by the Jayamukhi Educational Society, the Jayamukhi Institute of Technological Sciences came into being in 2001 to provide quality and contemporary education with social relevance in the engineering faculty with an ultimate vision to maintain global standards in higher learning and research. The Institute has the approval of AICTE and recognized by the Government of Telangana. It is an affiliated college of Jawaharlal Nehru Technological University (JNTU), Hyderabad .

The Institute has come upon 40 acres of green pastures in Narsampet, about 30km away from the historic city of Warangal and presents a picturesque and panoramic view. JITS offers a four-year B.Tech. Programme in the disciplines of CSE, ECE, EEE,CIVIL and ME with a total intake of 660 students and at the postgraduate level, it offers courses like M.Tech. (CSE), M.Tech. (SWE), M.Tech. (VLSI Design), M.Tech. (Embedded Systems), M.Tech.(Power Systems) ,M.C.A., M.B.A. in addition to Pharmacy and B.Ed. Courses under the fold of the same Society. Accreditation: Based on its outstanding academic, curricular and co-curricular track record established by it within a period of just seven years, the National Board of Accreditation of the AICTE has for the first time accredited all the four branches of engineering offered by Jayamukhi Institute of Technological Sciences. The branches include CSE, ECE, EEE, and IT. Wherever students go, the organizations prefer the students from the NBA accredited colleges and treated on par with the students of IITs and NITs.

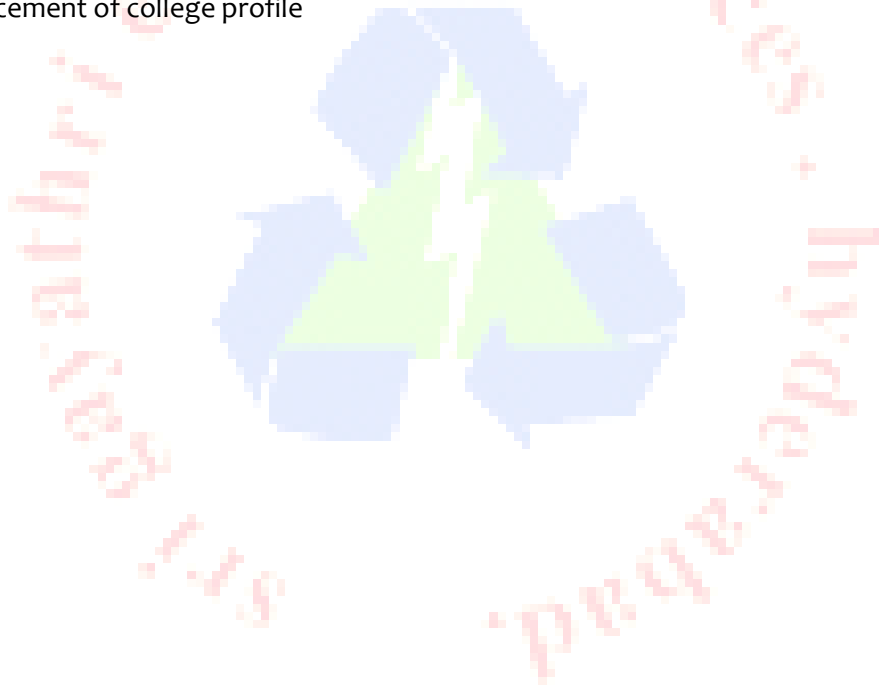
STATEMENT OF ASSURANCE

The Green Audit conducted for the Third time in the college. The Management had taken initiative to carryout the Green Audit externally. As mentioned above it is in the process of improving the awareness towards the renewable energy and sustainable development .The conclusions are based on a comparison of the situations as they existed at the time of the audit. The evidences presented are in support of the conclusions.

Goals of the College

In the effort to Enhancing an environmentally literate campus where students can learn the idea of protection of environment and stay healthy. The college Management is proactively working on the several facets of “Green Campus” including Plantation of more trees, Water Conservation, Efficient water usage by eliminating leaking water taps, Installation of ETP, Water Harvesting Pits and interconnecting them to Recharge the Ground Water table . Effective Waste Management which includes Food Waste, Plastic, Paper, Metal Work, Renewable Energy, carbon footprints etc.

1. To create a green campus with focus on above concepts
2. To Harness Solar Power
3. To Conserve Water by eliminating the water leakages , wastage, Rain Water Harvesting
4. To Reduce Waste management through reduction of Food waste generation, Plastic/Paper/Metal waste generation and effective disposal
5. To Reduce the Carbon Foot print
6. Enhancement of college profile



ENVIRONMENT

1. **Plantation of Trees:** The college management made it a practice to plant trees across the campus to improve greenery. This is a continual ongoing process and every year a target is taken to plant trees and increase the Green cover inside the campus. The Following are the objectives kept in mind for increasing the Green Area coverage inside the campus and internal in the buildings too.

Reducing Climate Change

If people are good at something, then it is building up excess carbon dioxide in the atmosphere. Harmful CO₂ contributes to climate change, the biggest current problem the world has to deal with. Trees, however, help fight it. They absorb CO₂ removing it from the air and storing it while releasing oxygen. Annually, an acre of trees absorbs the amount of carbon dioxide equal to driving your car 26 000 miles. Trees are our main survival tools; only one tree can produce enough oxygen for four people.

Purifying Air

Trees do purify the air. They absorb pollutant gases such as nitrogen oxides, ozone, ammonia, sulfur dioxide. Trees also absorb odors and act as a filter as little particulates get trapped in leaves. A mature acre of trees can yearly provide oxygen for 18 people.

Cooling Down the Streets

The average global temperature grew by 1.4 F. This happens as tree coverage declines. Removing trees and replacing them with heat absorbing asphalt roads and buildings makes cities much warmer. Trees are cooling cities by up to 10 F by providing shade and releasing water.

Natural Air Conditioning

Architects and environmentalists came up with the great solution – green roofs. Green roofs are an amazing way to incorporate vegetation to our Premises and provide environmental benefits. Indoor trees do not only have a calming effect, they also act as natural air conditioning.

Saving Water

Except for cooling, trees also help to save water. Because of the shade they provide, water will evaporate slowly from low vegetation. Trees need about 15 water gallons a week to survive, and they release about 200-450 gallons of water per day.

Our Case: Almost 14.677 acres of Tree plantation out of 25 Acres of the campus is having tree plantation and heading for area of Greenery

Renewable Energy: The campus is having enough area to install Grid Connected Solar PV in the campus . The campus installed 100 KWp solar PV to harness Solar Power from NOV 19.

Among all the benefits of solar energy the most important thing is that solar energy is a truly renewable energy source. It can be harnessed in all areas of the world and is available every day. We cannot run out of solar energy source.

Solar System has generated energy, the energy bills will drop. How much you save on bill will be dependent on the size of the solar system and electricity usage. Moreover, not only will you be saving on the electricity bill, there is also a possibility to receive payments for the surplus energy that you export back to the grid. If you generate more electricity than you use (considering that your solar panel system is connected to the grid).

Some of the key benefits of solar energy on the environment include:

- Using less water. Water is one of our most precious natural resources. ...
- Reducing air pollution. ...
- Help to slow climate change. ...
- Reducing your household's carbon footprint. ...
- Reducing our reliance on fossil fuels.

Our Case : Presently installed 100 KW Grid Connected Solar PV to Harness the Solar Power

Water Conservation, Harvesting and Management

Per capita water availability of many river basins in India is declining over the years due to sustained population pressure, agriculture and industrial expansion, besides changing climate scenarios. This is particularly evident from the fact that the per capita availability has decreased from 1816 m³/year in 2001 to 1545 m³/year in 2011.

Rainwater harvesting is a technique used for collecting, storing and using rainwater for domestic, agricultural or any other uses. The rainwater is collected from various hard surfaces such as rooftops, runoff from catchments, from streams and water conservation through watershed management or other manmade aboveground hard surfaces. It is an age-old system of collection of rainwater for future use. The harvested water can be stored on surface through ponds and tanks or can be recharged to groundwater.

Protection of Water from Pollution;

If the total fresh water available on the earth remains pollution free, it is sufficient to meet the drinking water needs of the existing population of the world, unfortunately a large portion of fresh water does not remain fit for use of the living world due to increasing economic activities, urbanization etc.

Rational Use of Groundwater:

Groundwater meets 25 per cent of total supply of water in the world, remaining 75 per cent supply is met by surface water sources of rivers, lakes etc. Demand for groundwater goes on increasing in proportion to its available quantity due to which quantity of groundwater goes on decreasing. After exploitation of groundwater, its re-infiltration takes a very long time to complete. Hence, groundwater exploitation should be only in proportion to its recharging capacity.

Increasing Forest Cover:

According to hydrological movements, water is received through rainfall every year different quantities on the surface of the earth. This water flows on the surface and reaches the seas. Some part of rainwater is stored in stable water reservoirs (lakes and tanks), whereas some quantity of water infiltrates into the land and takes the form of groundwater.

Our Case: It is proposed to Construct Water harvesting Pits 2 No's , It is also proposed to install ECO LOO , water conserving Toilets , this may result in 6 KL /day

Waste Management:

1. **Bio Waste** – Food Waste / Waste Paper

Food Waste : The Canteen situated in the campus which cooks food for almost 500 members has daily minimal food wastage . This Food waste can be used to generate Bio Gas which can be reused as a fuel for cooking the Food . It is proposed to install Bio Gas plant in the campus to generate Bio Gas from the food waste, which can be used in the Food Cooking. The Bio gas plant is installed and is functional.

Waste Paper : Biodegradable paper waste, which can be decomposed by biological processes, is called biodegradable waste. The waste paper is collected in the dust bins and disposed to scrap merchants on monthly basis

Present Status: Dust bins were provided for the waste disposal the same is collected daily once and handed over the Municipal corporation.

2. **Non- Bio Waste** – Plastic Bottles /Sanitary Pads

Non- biodegradable waste, which cannot be decomposed by biological processes, is called non- biodegradable waste. These are of two types - Recyclable: waste having economic values but destined for disposal can be recovered and reused along with their energy value. e.g. Plastic, paper, old cloth etc. Non-recyclable: waste which do not have economic value of recovery. e.g. Carbon paper, thermo coal, tetra packs etc. Disposal of non-biodegradable waste is a major concern, not just plastic, a variety of waste being accumulated. There are a few ways to help non-biodegradable waste management. The impact of non- biodegradable waste on the environment and also focus on its safe disposal for sustainable environment.

Present Status : The plastic bottles are collected in the dust bins and disposed to scrap merchant . The sanitary pads in the Girls Wash rooms are disposed with Incinerators .

3. **E Waste Management**

Waste Electrical and Electronic Equipment (WEEE) or E-waste is one of the fastest growing waste streams in the world. In developed countries, it equals 1% of total solid waste on an average. In developing countries, it ranges from 0.01% to 1% of the total municipal solid waste generation. In countries like China and India, though annual generation per capita is less than 1 kg, it is growing at an exponential pace.

Present Status : The College is collecting the E waste and disposing once in a year basis to the E Waste disposing agencies , the agency will come and pick up the E waste and dispose it in environmental friendly way.

Audit Framework and detailed findings of the Audit

| Objective | Observation/ Present status | Remarks / Recommendation |
|--|--|---|
| Green Cover - Plantation of Trees | Plantation of trees is started in the campus and the green cover is extended every year in the campus. At Present 14.67 Acres campus is having the Green cover. | A Continual plantation of trees is going on . A total area of 14 Acres is having greenery . |
| Renewable Energy – Harness Solar Power , Wind Power etc | A Grid Connected Solar PV plant is proposed to be installed with capacity of 100 KW very shortly . | It is recommended to Install the solar PV roof top plants to harness solar energy. |
| Water Conservation – i) Rain Water harvesting ii) Eliminating Leaking Taps iii) Avoid Misuse/wastage of water | <p>i) It is proposed to construct Rain water Harvesting pits</p> <p>ii) A Dedicated Team working on the repairing the leaking taps across the campus</p> <p>iii) RO Plant is installed for providing safe drinking water, which generates RO reject water, this water is used for Gardening.</p> <p>iv) Encourage to reduce the water usage by displaying mesaages</p> <p>v) It is recommended to install Water Sprinkler system installation is initiated to save water</p> | <p>They will be functional very shortly.</p> <p>Most of the taps are repaired, It is recommended to install taps with reduced water flow like shower / Mist.</p> <p>Reward the personnel informing Leaky taps, Paste Labels where ever water is expected to be wasted. Process initiated</p> <p>It is recommended to Install a Aqua Conditioner to reduce the RO Reject.</p> <p>Recommended to install Bio Toilets/Water Less Toilets like ECO Loo which reduces water usage and generates fertilizer from human waste and Natural liquid from the Urine which can be reused for gardening. Under process</p> |

| | | |
|--|---|--|
| <p>Waste Management</p> <p>i) Bio Waste</p> <p>ii) Non Bio Waste</p> <p>iii) E Waste</p> | <p>i) The Bio Waste – Food Waste generated in the canteen is proposed to be feed stock for Bio Gas plant</p> <p>ii) Paper Waste is disposed to scrap merchant</p> <p>iii) Non Bio Waste – Plastic Bottles / Paper Waste Metals waste is being collected in the dust bins placed across the campus .A GWMC team is visiting the campus on weekly basis and collecting the same.</p> <p>iv) E Waste – All Electronic Junk is generated in the campus in the form of Used Computer key boards/ Mouses/ CPU's/ Damaged Printers etc is disposed to E Waste agency which collects and disposes in an environmental friendly way.</p> | <p>i) Bio gas plant is proposed to be installed very shortly .</p> <p>ii) It is proposed to install plastic bottle crusher, which can be sold as a feed stock for the Plastic industry.</p> <p>iii) Installed Sandy (Sanitary napkin crusher at ladies Toilet) to avoid choking of toilets and wastage of water.</p> <p>iv) It is recommended to have an MOU with E Waste disposal agency on yearly basis.</p> |
|--|---|--|

Carbon Foot Print

Total students: 1472 / Faculty: 208 / Staff: 59 / Buses: 24

A detailed Carbon foot print calculation is presented in later chapters

| | | |
|--|--|--|
| Carbon Foot Print i) Transportation | i) Most staff commute in the College Transport - Buses from City ii) Students commute in the college provided transport - Buses | i) Adequate buses are available for the Staff /students. |
|--|--|--|

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2. Bio Toilets -<https://www.iwapublishing.com/news/bio-toilets-sustainable-solution-india%E2%80%99s-sanitation-challenge>
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6. Guidelines For Improving Water Use Efficiency in Irrigation, Domestic & Industrial Sectors as Per IS – 1172 - 1993
7. IEC 62891Solar PV For Grid Interactive system, IEC 61853- Part 1/ IS 16170 : Part 1for Solar PV Panels
8. Central Public Health and Environmental Engineering Organization (CPHEEO) Manual on Municipal Solid Waste Management.
9. Draft Indian Standard Municipal Solid Waste Management – Segregation, Collection & Utilization at Household/community for Recovery and Recycle as per IS : 9659
10. Indian Guide Lines for Carbon Foot print and reduction strategies <https://indiaghgp.org/project-accounting-protocol-and-guidelines>

Visuals of Plantation of Trees across the campus

A Detailed Pictures are attached with this report





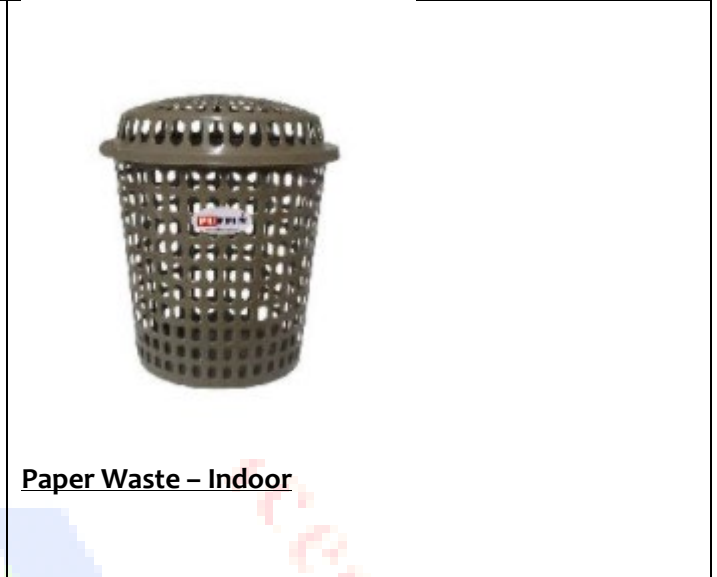




Waste Collections Bins



Paper Waste - Outdoor



Paper Waste - Indoor



Waste paper bin



Waste Bins

Sanitary Pad Incinerator : It is proposed to install Sanitary pad Incinerator to dispose them in an environmentally friendly way.



E Waste management:

Policy : E-waste Management: Electronic equipment such as Computers, TV, Phones, Printers, Fax and Photocopy machines are recycled properly. Electronic goods are put to optimum use and the minor repairs are set right by the Laboratory Assistants; and the major repairs are taken up by the professional technicians and then reused. UPS Batteries are recharged and repaired by the suppliers. **Jayamukhi Institute of Technological Sciences** zero waste management through recycle and up cycle. All electronic equipment used in the campus are regularly maintained and repaired to ensure minimum e - waste. Hazardous chemicals and radioactive waste management: Hazardous Chemicals are kept separately well labeled in the store room away from the reach of students. The hazardous chemical waste is properly treated before it is allowed to go into the drains. There is no use of any radioactive substance in the campus. Biomedical waste management: The institute is not involved in handling of microbes or clinical samples directly hence biomedical waste is not generated.

It is recommended to enter in to an agreement for disposal of the E Waste which are mentioned below with an agency

1. Electronic Waste (E-Waste) -The Term E-Waste will refer to the below mentioned electrical and electronic waste for the purpose of this Agreement which includes;
 - a) Computers & Peripherals (CPU, Keyboard, Mouse& Monitor)
 - b) Laptops
 - c) Servers
 - d) PCBs
 - e) Mobiles or Communication devices
 - f) Mother Boards (Computers &Laptops)
 - g) Security Devices
 - h) Telecom Equipment
 - i) Printers & Scanners
 - j) Military Electronic
 - k) Control Systems
 - l) Data Cables and wires
 - m) Batteries
 - n) CD/DVD
 - o) Tube lights and CFL

Carbon Foot Print

The Jayamukhi Institute has total members – 1679 , Students – 1471 , staff -208 (Teaching + Non Teaching-) the Co2 emission is 6211 Kg/day

Members by Two Wheeler – 100 – Co2 emission is. 156.75 Kg /day

Members by College Bus – 1474 - Co2 emission is 6011 Kg/day

Members by Individual Car -4 – Co2 emission is 53.66 Kg/day

Note: Assume each member travel a distance of 25 kms to college and 25 kms return to home .

| Mode of Transit | CO ₂ released (per km driven per person) | CO ₂ released during production of vehicle |
|-----------------|---|---|
| Car | 271 g | 313 g |
| Bus | 101 g | --- |
| Bicycle | 16 g (This is from the fuel of the rider – food) | 16 g |

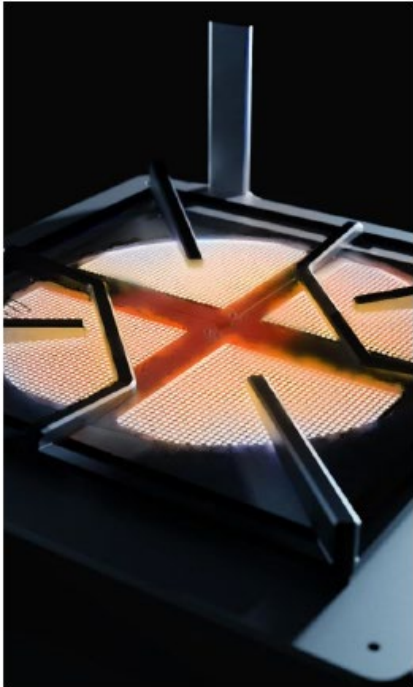
| | Pounds CO ₂ | Kilograms CO ₂ | Pounds CO ₂ | Kilograms CO ₂ |
|---|----------------------------|---------------------------|------------------------|---------------------------|
| Carbon Dioxide (CO ₂) Factors: | Per Unit of Volume or Mass | Volume or Mass | Million Btu | Million Btu |
| FOR HOMES AND BUSINESSES | | | | |
| Propane | 12.70/gallon | 5.76/gallon | 139.05 | 63.07 |
| Butane | 14.80/gallon | 6.71/gallon | 143.2 | 64.95 |
| Butane/Propane Mix | 13.70/gallon | 6.21/gallon | 141.12 | 64.01 |
| Home Heating and Diesel Fuel (Distillate) | 22.40/gallon | 10.16/gallon | 161.3 | 73.16 |
| Kerosene | 21.50/gallon | 9.75/gallon | 159.4 | 72.3 |
| Coal (All types) | 4,631.50/short ton | 2,100.82/short ton | 210.2 | 95.35 |
| Natural Gas | 117.10/thousand cubic feet | 53.12/thousand cubic feet | 117 | 53.07 |
| Gasoline | 19.60/gallon | 8.89/gallon | 157.2 | 71.3 |
| Residual Heating Fuel (Businesses only) | 26.00/gallon | 11.79/gallon | 173.7 | 78.79 |
| OTHER TRANSPORTATION FUELS | | | | |
| Jet Fuel | 21.10/gallon | 9.57/gallon | 156.3 | 70.9 |
| Aviation Gas | 18.40/gallon | 8.35/gallon | 152.6 | 69.2 |
| INDUSTRIAL FUELS AND OTHERS NOT LISTED ABOVE | | | | |
| Flared natural gas | 120.70/thousand cubic feet | 54.75/thousand cubic feet | 120.6 | 54.7 |
| Petroleum coke | 32.40/gallon | 14.70/gallon | 225.1 | 102.1 |
| Other petroleum & miscellaneous | 22.09/gallon | 10.02/gallon | 160.1 | 72.62 |
| NONFUEL USES | | | | |
| Asphalt and Road Oil | 26.34/gallon | 11.95/gallon | 166.7 | 75.61 |

| | | | | |
|--|--------------------|--------------------|--------|--------|
| Lubricants | 23.62/gallon | 10.72/gallon | 163.6 | 74.21 |
| Petrochemical Feedstocks | 24.74/gallon | 11.22/gallon | 156.6 | 71.03 |
| Special Naphthas (solvents) | 20.05/gallon | 9.10/gallon | 160.5 | 72.8 |
| Waxes | 21.11/gallon | 9.57/gallon | 160.1 | 72.62 |
| COAL BY TYPE | | | | |
| Anthracite | 5,685.00/short ton | 2,578.68/short ton | 228.6 | 103.7 |
| Bituminous | 4,931.30/short ton | 2,236.80/short ton | 205.7 | 93.3 |
| Subbituminous | 3,715.90/short ton | 1,685.51/short ton | 214.3 | 97.2 |
| Lignite | 2,791.60/short ton | 1,266.25/short ton | 215.4 | 97.7 |
| Coke | 6,239.68/short ton | 2,830.27/short ton | 251.6 | 114.12 |
| OTHER FUELS | | | | |
| Geothermal (average all generation) | NA | NA | 16.99 | 7.71 |
| Municipal Solid Waste | 5,771.00/short ton | 2,617.68/short ton | 91.9 | 41.69 |
| Tire-derived fuel | 6,160.00/short ton | 2,794.13/short ton | 189.54 | 85.97 |
| Waste oil | 924.0/barrel | 419.12/barrel | 210 | 95.25 |
| Source: U.S. Energy Information Administration estimates. | | | | |
| Note: To convert to carbon equivalents multiply by 12/44. Coefficients may vary slightly with estimation method and across time. | | | | |
| Carbon Dioxide Emissions Coefficients by Fuel | | | | |
| Detailed factors (discontinued) | | | | |

A Green Initiative : Bicycles are kept at the campus for commutation within the campus for the staff / students



Improve Efficiency of Cooking – Agnisumukh



AGNISUMUKH

THE TECHNOLOGY - OUR CONTRIBUTION IS THE FIRST TO THE NATION

Agnisumukh Energy Solutions has developed an energy efficient clean tech product which has transformed lives in commercial kitchens. Industrial Applications

Agnisumukh provides Commercial Kitchens with a Patented Product which provides significant advantage over the existing Conventional Kitchen Equipment, Industrial Applications

Agnisumukh manufactures energy efficient commercial kitchen ranging from cookstoves to steam boilers.

Agnisumukh as a Technology can be fuelled by LPG, PNG and Bio Gas and hence it is a Clean Energy solution which has wide range of applications



ECO LOO for improving Water Conservation

ABOUT US
ECOLOO Group is a leading Swedish-based green technology organization specializing in sustainable sanitation solutions and other green innovations. Our objective is to address the pressing waste, water, sanitation and hygiene (WASH) issues across the world, particularly the developing countries, reduce poverty and ensure environmental sustainability in line with United Nation's Millennium Development Goals (MDG). We adopt an Inclusive Social Business Model with our global partners that create business and job opportunities to make our world a better place to live in.

OUR APPROACH
 ECOLOO understands how difficult and stressful a situation can be to people who have no access to proper toilets, water or sewage treatment plant. With this in mind, we, together with our social business partners and CSR companies around the world, are dedicated to making the access possible and making the socio-economy as viable as possible through our inclusive social business model.

OUR PRODUCTS
 We produce a universal odour free, water free, sewage free, energy free and chemical free biological toilet solution and the end product is a nutritious fertilizer perfect for agriculture. ECOLOO uses safe bacteria to treat the pee and poo and involves no pee diversion, no hurdles to maintain and no poo collection or removal, only natural fertilizer collection from the treated pee to be exchanged with money or additional bacteria. In other words, it requires a one time off capital investment to buy a money making machine! Other than toilets, we also offer sustainable urinals, tents, wagons, kiosks, lodges, shower, water recycling system and sanitary products.

OUR SERVICES
 Our services include WASH related awareness, educational and training programs, events, advertising, rental and maintenance services with the initiative to help our business owners and homeowners who are struggling with their toilet issues and providing them with the solutions, guidance and education through our sustainable toilet.

OUR SOLUTION
 ECOLOO is a stand alone, decentralized toilet solution that is made of a 2-tier box: The upper box is where the pee, poo and good bacteria go to and where an organic filter is placed. The lower box is where the treated pee or water drop at the end of the whole process after going through the nitrification process and transformed into natural fertilizer. Our fertilizer is full of nutrition, odour free, pathogen free, safe to use and perfect for agriculture. ECOLOO comes in various shapes and designs to fit all purposes in all climate conditions, indoor or outdoor, anywhere!

OUR UNIQUENESS

- No odour
- Easy to install, use and maintain
- No eye or physical contact with poo and pee
- No septic tank or sewage treatment plant required
- No water flushing, only for washing or cleaning
- Ergonomically and comfortably designed
- Temporary or permanent, long term & non-polluting solution
- No energy sources required, only wind or solar or minimal energy demand
- Best alternative to flush toilets, sewers and so-called sewage treatment
- Major cut of the cost of waste handling or transportation
- Functions in perfect harmony with environment
- Poo and pee isolated from its disease carrying pathogens and its medical residues for several decades without entering the environment using our special formulated bacteria

OUR PURPOSES

- Forest reserved areas, national parks and tourist attractions
- Remote or lack of water or non possibility for sewage system areas
- High ground water level areas
- Rural and urban slum areas
- Natural disaster areas e.g. refugee camps, temporary clinics
- Large event areas e.g. concerts, festivals, exhibitions, marathons
- Schools, colleges, universities and campuses
- Sports arenas or stadiums or extreme parks
- Public and private recreational areas e.g. camping sites
- Public and private waiting areas e.g. bus terminals, train stations, rapid transit stops
- Hospitals, office buildings, exhibition or convention centres
- Construction and mining areas
- Pilgrimage or sacred gathering areas
- Highway or country road rest areas
- Pavements, beaches, islands, lakes, river, hot spring, golf courses
- Inside floating houses or restaurants or chalets
- Inside public transports

ECO DELUXE ECO PEE ECO BASIC ECO CLASSIC ECO TENT

Water Harvesting

Rainy FL Series on Site installation (Model FL 500)



The characteristic features of FL Series Dual Intensity RWH Filters is its capacity to handle loads from 50 to 500 square meters of Roof area even at higher intensity of rainfall of 75 mm/hour with a discharge capacity of 105 to 480 LPM. The filters can be conveniently used for Harvesting Rainwater for Individual households, Schools, Apartments, Institutions, Commercial Buildings and Industries.

Water saving

Ex: A house with a roof area of 110 sq. Meters (30' x 40' = 1,200 sqft) with an annual rainfall of 1000 mm can provide an assured supply of 1,00,000 liters of water per year.

SAVE RAINWATER

Our Clients



Farmland Rainwater Harvesting Systems

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Dual Intensity Rainwater Harvesting filters™

WINNER OF NATIONAL AWARDS FROM

JSW - THE TIMES OF INDIA
 SAFER CARE AWARDS 2010 & 2014
 Award for Excellence in Green-Design, Materials & Logistics
 Innovation for Cleaner Production

CII
 As a 'Best Innovative Water Saving Product'

Save Rainwater www.rainyfilters.com