

Green Audit
of



M/s Mahaveer Institute of Science and Technology,
Vyasapuri, Bandlaguda, Post: Keshavgi, Hyderabad- 500 005, Telangana

2018-19

By



SRI GAYATRI ENERGY SERVICES

we support you conserve

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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 **Mahaveer Institute of Science and Technology** ,Vysapuri, Bandlaguda, Hyderabad, Telangana for entrusting the Green Audit work of their College.

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

Sri **S. Sudershan Reddy**

Chairman

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Dr. Sri **.Dr.K.S.S.N. Reddy**

Principal

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Nothing in this disclaimer notice excludes or limits any warranty implied by law for death, fraud, personal injury through negligence, or anything else which it would not be lawful for to exclude.

We trust the data provided by the M/s **Mahaveer Institute of Science and Technology, Vysapuri, Bandlaguda**, Hyderabad, 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

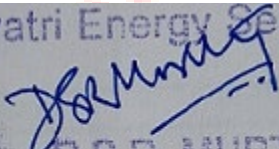
Shri Venkat Ramana Engineer

Shri Ashok Engineer



CERTIFICATE

We here by certify that we carried out Green Audit in the M/s **Mahaveer Institute of Science and Technology**, Vysapuri, Bandlaguda Hyderabad, Telangana during 19 September 2018 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 **Mahaveer Institute of Science and Technology**, Hyderabad, Telangana in this regard.

For Sri Gayatri Energy Services

D.S.R. MURTHY
EA-3815
Certified Energy Auditor

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 2,247.3425 Sq M which is mandatory for mitigating the Global warming.(Photos enclosed)
3. The Grid Connected Solar PV is installed as part of Renewable energy initiative to the tune of 100 KW during year 2016 and the institute is reaping the benefits of Solar PV plant for last 2 years It is proposed to extend it further in near future. There by reducing the energy dependence on the Grid .
4. The Water conservation measures are already in place viz., Fixing the leaky taps , pasting water conservation posters in the Wash rooms and further modification of existing waste water usage to conservation of water . The waste water used at wash basins will be collected and recycled for usage in the toilets.
5. Water Wastage – Leaky taps are repaired/replaced, close monitoring of the Water usage closely by maintaining.
6. Water is treated in in RO plant,safe drinking water is provided to students and faculty, waste water is utilized for watering the plants so that the water wastage can be minimized.Waste Management is segregated in to three categories like
 - 7.i) Bio Degradable Waste (Food 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 . The Procurement is in process, shortly it will be installed.
 - ii) Non Bio Degradable Waste (Plastic/Papers and 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).iii) It is proposed to install Incinerators in the Girls Toilets to dispose the Waste .
8. It is proposed to install Bio Toilets which does not require water so that the water consumption can be reduced
9. It can be concluded that the Green Audit initiatives are started and College Management recognized the importance and taking proactive steps towards sustainable environment.

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

As an Institute committed to quality education, MIST aims at providing learning with a technology-edge. It endeavors to provide consistent training to its students to help them evolve as competent professionals in the highly competitive world. Right from its inception in 2001, it has been tuning itself to meet this objective.

A new civilization is emerging in our lives. This new civilization brings with it a new way of working. Millions are already tuning their lives to the rhythms of tomorrow.

The technological revolution and the forces of globalization are changing the very functioning of the organizations significantly in recent years.

Success nowadays, requires not only the ability to perform according to the requirements of the position, but also the ability to adjust and get along as a member of a working team. Two critical aspects of preparation for success in the workplace are Education and Training, so that you will have the required knowledge, skills and a high level of self-motivation including initiative and responsibility.

STATEMENT OF ASSURANCE

The Green Audit is conducted for the First 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 STP, 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: The campus has 0.555 acres of Tree plantation out of 7.19 Acres

Renewable Energy: 100 kW Solar PV Grid Connected and there is available area for further addition of Solar PV plant.

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.

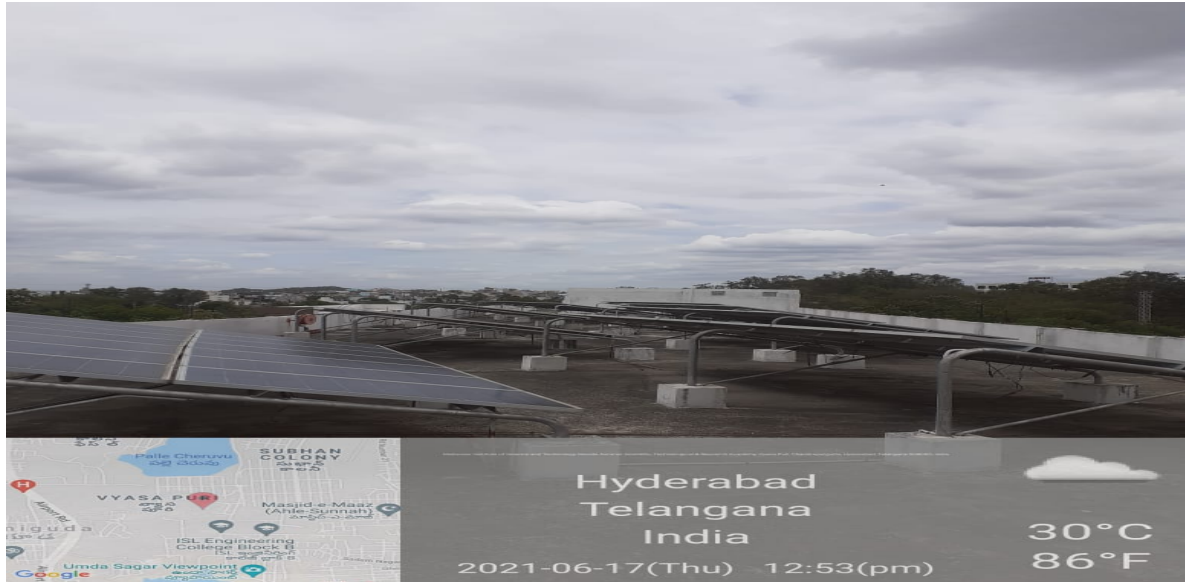
Solar System has generated energy, the energy bills will drop. How much you save on bill will be dependent on the size of the solar system and electricity usage. Moreover, not only will you be saving on the electricity bill, there is also a possibility to receive payments for the surplus energy that 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 and further enhancement of solar PV is in the pipe line.

Solar PV Installed at the campus



Meters



Meters -1



Energy Generation Details of the 100 KW Solar PV Plant

Panels Group	Power Generation in KWH		
	2016	2017	2018
1	24058	24967	24927
2	23438	23649	24061
3	22776	23320	23584
4	22114	22820	23035
5	22548	22745	22888
6	23640	23750	6660
Total	138574	141251	125155



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 1545m³/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: Existing Waste water is disposed to open which is proposed to modify and the same waste water may be used for re use as toilet water so that waste water can be used and water can be conserved .

It is also recommended to install ECO LOO Toilets to save water approx. 4000 Ltrs /day .

Technological improvement for better Rain Water Harvesting

Rainy Filter Series Installation Manual (Model F1, 2008)

Our Clients

- Residential Sector
- Commercial Sector
- Institutional Sector

Rainy Filter Series

Dual Intensity Rainwater Harvesting filters™

Save Rainwater

Water-saving

Ex: A House with total area of 100 sq. Meters (30' x 30') with an annual rainfall of 1000mm provides an annual supply of 1,00,000 liters of water per year.

Save Rainwater

Various applications through 'Rainy' Filters

Special Features

- Dual Intensity Filter works on the principle of release & reabsorption.
- The open ended design does not allow stagnation of water in the filter.
- Works on Gravitational Force/No external energy required.
- Cost Effective and Efficient.
- Compact size and easy to mount.
- Inbuilt Self-Cleaning Mechanism.
- Automatic Backflow of Impurities.
- No consumables required.
- Flexibility in pipe connection for any angle and length.
- User Guide & Manual provided.
- Provision of Repair Valve.
- No Moving Parts, no Noise & Low Consumption.

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Parameter	Rainy F1, 2008	Rainy F1, 2008	Rainy F1, 2008	Rainy F1, 2008
Capacity (at 100mm Rain)	100 Litres/Day	200 Litres/Day	300 Litres/Day	400 Litres/Day
Max. Intensity of Rainfall	10mm/hr	20mm/hr	30mm/hr	40mm/hr
Working Principle	Gravitational Force / No External Energy			
Dimensions	100 x 100 x 100	150 x 150 x 150	200 x 200 x 200	300 x 300 x 300
Water Treatment	Self-Cleaning	Self-Cleaning	Self-Cleaning	Self-Cleaning
Water Flow	100 Litres/Day	200 Litres/Day	300 Litres/Day	400 Litres/Day
Cost	Low	Low	Low	Low
Chemical/Power Required	No	No	No	No
Space Required	Small	Small	Small	Small
Material	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Efficiency	90%	90%	90%	90%
Material of Construction	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel



PRODUCT SPECIFICATIONS

PRODUCT	DESCRIPTION <small>1 year warranty applies on all ECOLOO products supplied</small>	PURPOSE
	<p>INDOOR/OUTDOOR ECO DELUXE</p> <ul style="list-style-type: none"> • Base: FRP, Weight: 50kg • Dimension without box: 835mm (W) x 865mm (L) x 635mm (H) • Dimension with box: 850mm (W) x 880mm (L) x 665mm (H) • Items included: Toilet Seat, Toilet Lid, Dry Flush, Wind Ventilation Fan, Drop Bed. 	<ul style="list-style-type: none"> • Indoor purpose • Inside transportation • Off grid housing (i.e. Ger Tent) • One family per house
	<p>INDOOR/OUTDOOR ECO BASIC</p> <ul style="list-style-type: none"> • Material: FRP, Weight: 90kg • Type: ECO BASIC • Dimension: 1100mm (W) x 750mm (H) x 1350mm (L) • Capacity: <ul style="list-style-type: none"> ◦ Upper: 450L (Solid) ◦ Bottom: 250L (Liquid) • Items included: Toilet Seat + Lid, Dry Flush, Wind Ventilation Fan, Drop Bed. (Mechanical Waste Cover is Optional) 	<ul style="list-style-type: none"> • Outdoor purpose • Schools • Up to 15 visits / hour, 24/7 (200+ visits/day) • Can be used for indoor for bigger toilet room with partitions • Proper housing or structure can be placed around the toilet base for outdoor purpose
	<p>OUTDOOR ECO CLASSIC</p> <ul style="list-style-type: none"> • Type: ECO BASIC + Structure • Total Weight: 160kg, Knock Down (D-I-Y) • Structure: Light Composite 38 mm insulated Panels (normally used for cold rooms and trucks), Door, Roof • Optional: Mechanical Waste Cover, Solar Panel & Lighting, Hand bidet, Hand grab, Toilet Paper Holder, Hand Sanitizer, Fertilizer Pump . etc. • Dimension: 1100mm (W) x 2200mm (H) x 1350mm (L) 	<ul style="list-style-type: none"> • Outdoor purpose • D-I-Y Structure can be installed within less than 1 hour • Up to 15 visits / hour, 24/7 (200+ visits/day)
	<p>OUTDOOR ECO TENT</p> <ul style="list-style-type: none"> • Type: ECO BASIC + TENT • Total Weight: 150kg, Knock Down (D-I-Y) • Structure: Waterproof, Quality Plastic (double layers), Quality Zipper, Painted Galvanized Pipe Pillars • Dimension: 1100mm (W) x 2200mm (H) x 1350mm (L) 	<ul style="list-style-type: none"> • Outdoor purpose especially for disaster relief and military • D-I-Y Structure can be installed in 10 minutes • Up to 15 visits / hour, 24/7 (200+ visits/day)

Waste Management:

1. **Bio Waste** – Mostly Food Waste is generated from the cooked food at the campus in the canteen. 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.

2. **Non Bio Waste** – Plastic Bottles / Waste Paper / Cardboards/ Batteries etc

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 :Dust bins were provided for the waste disposal the same is collected daily once and handed over the Municipal corporation. The College is proposing to have an MOU with M/s Urban Rebox, Hyd to dispose the E Waste. Every year the agency will come and pick up the Non Bio waste and dispose it in environmental friendly way.

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 proposing to have an MOU with M/s Urban Rebox, Hyd to dispose the E Waste. Every year the agency will come and pick up the E waste and dispose it in environmental friendly way.

Carbon Foot Print

Total students: 1454 / Faculty:221 / Staff- 72 /Buses: 11/ Individual Cars -10 / Two Wheelers - 250

Detailed Calculation of Carbon Foot print is given in further chapters

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



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 0.555 Acres campus is having the Green cover.	A Continual plantation of trees is going on . It is recommended to increase the Green Cover further to another 0.8 Acre in coming years.
Renewable Energy – Harness Solar Power	A Grid Connected Solar plant is installed with capacity of 100 KW	The Solar PV plant is functional and exporting clean energy to the grid . It is recommended to explore the vacant areas to increase the solar roof top plants to harness more solar energy.
Water Conservation – i) Rain Water harvesting ii) Eliminating Leaking Taps iii) Avoid Misuse/wastage of water	i) Rain water Harvesting pits in place ii) A Dedicated Team working on the repairing the leaking taps across the campus iii) RO Plant is installed for providing safe drinking water, which generates RO reject water, this water is used for Gardening. iv) Encourage to reduce the water usage	They are under construction and soon become functional Most of the taps are repaired, It is recommended to install taps with reduced water flow like shower / Mist. Reward the personnel informing Leaky taps, Paste Labels where ever water is expected to be wasted. Process initiated It is recommended to Install a Aqua Conditioner to reduce the RO Reject. 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.

	v) Water Sprinkler system installation is initiated to save water	Under process
Waste Management		
i) Bio Waste	i) The Bio Waste – Food Waste generated in the canteen is proposed to be feed stock for Bio Gas plant .	i) Proposed to install Bio gas plant in coming years
ii) Non Bio Waste	ii) Paper Waste – Dust bins are placed across the campus .	ii) Increase the number of dust bins in the campus
	iii) Non Bio Waste – Plastic Bottles Waste Metals waste is being collected in the dust bins placed across the campus .	iii) It is proposed to install plastic bottle crusher, which can be sold as a feed stock for the Plastic industry. An agreement is under process with M/s Urban Rebox Hyd to pick up the E waste every month
iii) E Waste	iv) Non Bio Waste – Sanitary napkins	iv) Proposed to Install Sanitary napkin incinerator at ladies Toilet to avoid choking of toilets and wastage of water.
	v) E Waste – All Electronic Junk is generated in the campus in the form of Used Computer key boards/ Mouses/ CPU's/ Damaged Printers etc	v) An agreement is under process with M/s Urban Rebox Hyd to pick up the E waste every month

References

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3. Bio Toilets : <https://www.indiascience.in/videos/bio-toilets-sustainable-solution-for-sanitation-e>
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6. Guidelines For Improving Water Use Efficiency in Irrigation, Domestic & Industrial Sectors as Per IS – 1172 - 1993
7. IEC 62891 Solar PV For Grid Interactive system, IEC 61853- Part 1/ IS 16170 : Part 1 for 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



Grid Connected Solar PV installed at the Campus

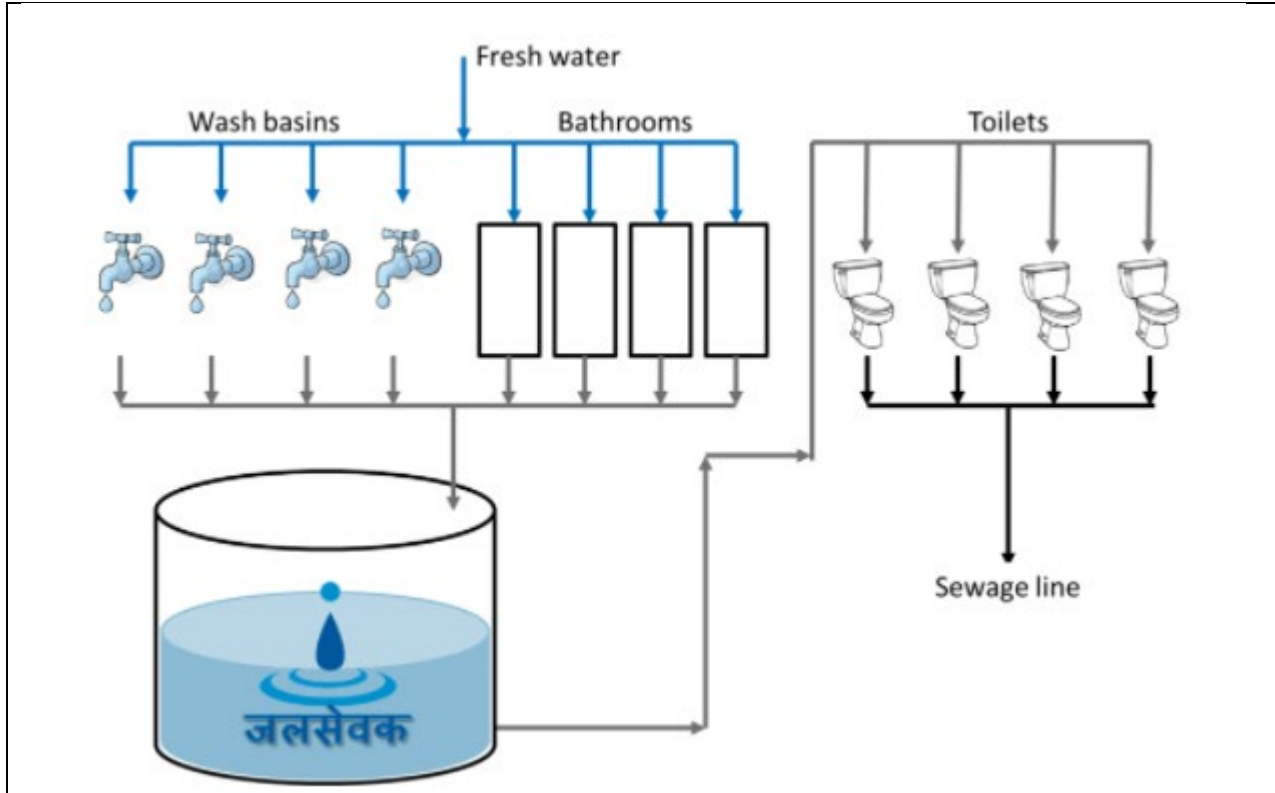


Solar PV Panels on roof top

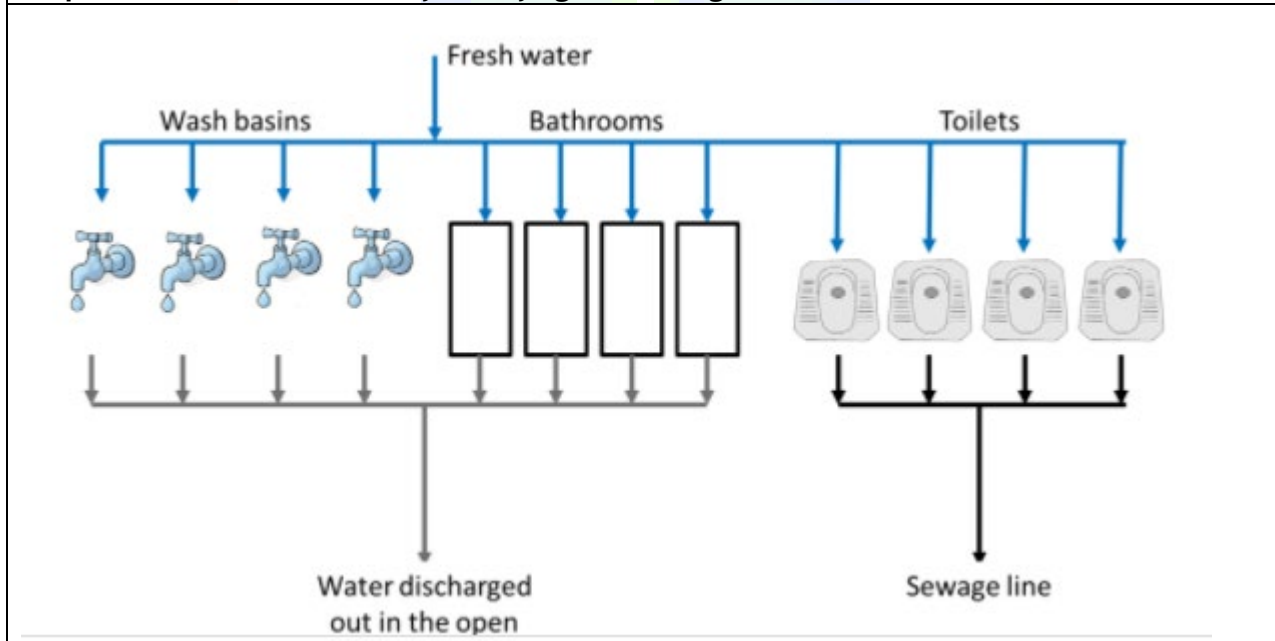


Solar PV Inverters

Water Conservation by modifying the existing Waste Water usage



Proposed Water Conservation by modifying the existing waste water



Existing Waste Water disposal system - The Waste water is disposed in open

Waste Collections Bins



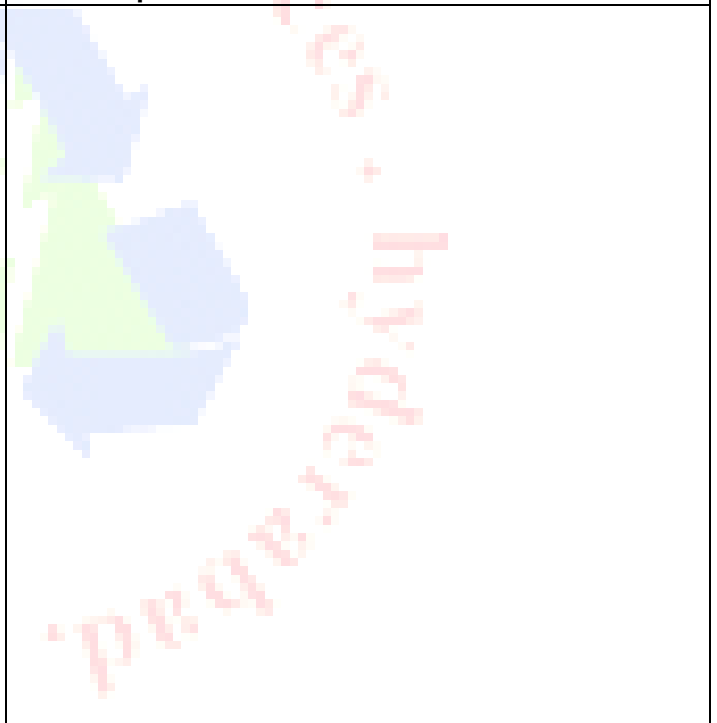
Waste Paper Collection Bin for out door



Waste Paper Collection Bin for Indoor



Plastic Bottle Crusher for disposal



Waste Management – Bio Degradable

A Bio Gas plant is proposed to be installed very shortly, the procurement is in process and expected to be completed in couple of months which will help in reducing the food waste generated in the campus to be utilized completely.

BIO GAS PLANT




Bio Degradable Waste – Sanitary pads – Proposed to install Incinerators in Female Wash rooms for environmental friendly disposal

Bio- Degradable Waste – Paper

Policy Statement : MISTs key operations have very less impact on the environment degradation. The college is very conscious of generating less waste and recycling it by passing it through a system that enables the used material to be reused ensuring that less natural resources are consumed. We are in the process of signing MOU with ITC franchisee URBAN REBOX IT PVT Ltd for promoting zero waste management (recycle, upcycle of e-waste, plastic and solid waste). Student Volunteers Constructed Meditation Cabin in NSS room with used water bottles in this way we are encouraging the reuse of solid waste. Solid Waste Management: The waste is generated by all sorts of routine activities carried out in the College that includes paper, plastics, glass, metals, foods, etc. The waste is segregated at each level and source. The administrative supervisor in each block ensures that the waste in each floor is collected at designated time intervals. The floor dustbins are emptied in movable containers/dustbins provided for each block and is taken to the dumping yard provided by the college. From kitchen waste only vegetables peel (not leftover food) fruit juice point waste and trodden leaves use for generation of gas in Bio gas plant which is planned for installation at college canteen. The slurry produced by biogas plant is used as organic manure for plants

Waste Disposal Bins

 <p>Hyderabad, Telangana, India Mahaveer Institute of Science and Technology, Beside Aurora's Scientific Technological & Research Academy, Vyasa Pur, Chandrayangutta, Hyderabad, Telangana 500005, India Lat N 17° 18' 26.7946" Long E 78° 27' 21.5316" 10/06/21 12:40 PM</p>	
Paper Waste collected in the campus	Paper Waste Collection Bins -out door



RO PLANT

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. Mahaveer Institute of Science & Technology (MIST) is proposing MOU with ITC franchisee URBAN REBOX IT PVT Ltd for safe disposal and recycling of solid wastes towards 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.

An agreement is under process with M/s Urban Rebox, Hyd for disposal of the E Waste which are mentioned below , shortly it will be implemented.

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 Mahaveer Institute of Science and Technology has total Student + staff(Teaching + Non Teaching) of 1747 2 members (Students -1 454 , Teaching Staff -221 , Non Teaching Staff – 72) , the Co2 emission is 717.07 Kg/day

Members by Two Wheeler – 430 – Co2 emission is 647.15 Kg /day

Members by College Bus –450 - Co2 emission is 1.2 Kg/day ;

Members by Public Transport – 750 - Co2 emission is 1.51 Kg/day ;

Members by Car Pooling – 50 – Co2 emission is 13.55 Kg/day

Members by Individual Car -5 – Co2 emission is 53.66 Kg/day

Students by College Bus -

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)				

Green Audit
of



M/s Mahaveer Institute of Science and Technology,
Vyasapuri, Bandlaguda, Post: Keshavgiri, Hyderabad- 500 005, Telangana

2019-20

By



SRI GAYATRI ENERGY SERVICES

we support you conserve.

Flat :401, SS Enclave, 2-1-255, St. No:14, Nallakunta, Hyderabad, M:9848050598

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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 **Mahaveer Institute of Science and Technology** ,Vysapuri, Bandlaguda, Hyderabad, Telangana for entrusting the Green Audit work of their College.

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

Smt. **S. Jaya lakshmi**

Chairperson

Sri **S. Surender Reddy**

Secretary

Dr. Sri **HSN Murthy**

Director

Dr. **Sri.K.S.S.N.Reddy**

Principal

Disclaimer

Warranties and Liability

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Exceptions

Nothing in this disclaimer notice excludes or limits any warranty implied by law for death, fraud, personal injury through negligence, or anything else which it would not be lawful for to exclude.

We trust the data provided by the M/s **Mahaveer Institute of Science and Technology, Vysapuri, Bandlaguda**, Hyderabad, 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

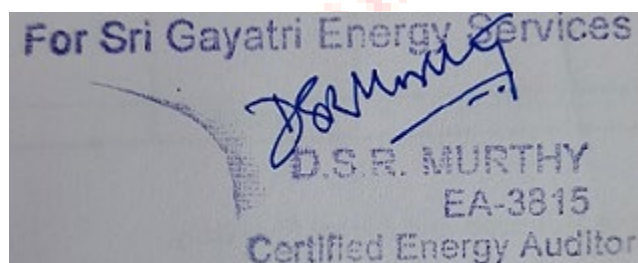
Shri Venkat Ramana Engineer

Shri Ashok Engineer



CERTIFICATE

We here by certify that we carried out Green Audit in the M/s **Mahaveer Institute of Science and Technology**, Vysapuri, Bandlaguda Hyderabad, Telangana during 22 November 2019 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 **Mahaveer Institute of Science and Technology**, Hyderabad, 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 2541.77 Sq M which is mandatory for mitigating the Global warming.(Photos enclosed)
3. The Grid Connected Solar PV is installed as part of Renewable energy initiative to the tune of 100 KW during year 2016 and the institute is reaping the benefits of Solar PV plant for last 3 years It is proposed to extend it further in near future. There by reducing the energy dependence on the Grid .
4. The Water conservation measures are already in place and further advancements are going on like Two numbers of Water harvesting pits are operational at individual buildings rain water soak pits are under construction so that the same can be interconnected to the Water Harvesting pits.
5. Water Wastage – Leaky taps are repaired/replaced, close monitoring of the Water usage closely by maintaining.
6. Water is treated in in RO plant,safe drinking water is provided to students and faculty, waste water is utilized for watering the plants so that the water wastage can be minimized.
7. Waste Management is segregated in to three categories like
 - i) Bio Degradable Waste (Food 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 . The Procurement is in process, shortly it will be installed.
 - ii) Non Bio Degradable Waste (Plastic/Papers and 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 (An MOU signed-copy enclosed)
 - iii) E Waste Management MOU is signed with Urban Rebox IT Pvt. Ltd , Hyd for picking up the E waste generated annually and dispose the E waste in eco- friendly way .(Enclose copy of MOU).
8. It is proposed to installed Bio Toilets which does not require water so that the water consumption can be reduced
9. It can be concluded that the Green Audit initiatives are started and College Management recognized the importance and taking proactive steps towards sustainable environment.

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

As an Institute committed to quality education, MIST aims at providing learning with a technology-edge. It endeavors to provide consistent training to its students to help them evolve as competent professionals in the highly competitive world. Right from its inception in 2001, it has been tuning itself to meet this objective.

A new civilization is emerging in our lives. This new civilization brings with it a new way of working. Millions are already tuning their lives to the rhythms of tomorrow.

The technological revolution and the forces of globalization are changing the very functioning of the organizations significantly in recent years.

Success nowadays, requires not only the ability to perform according to the requirements of the position, but also the ability to adjust and get along as a member of a working team. Two critical aspects of preparation for success in the workplace are Education and Training, so that you will have the required knowledge, skills and a high level of self-motivation including initiative and responsibility.

STATEMENT OF ASSURANCE

The Green Audit conducted for the Second 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 0.628 acres of Tree plantation out of 7.19 Acres . The campus is having further plans to enhance tree plantation and heading for increasing area of Greenery

Renewable Energy: 100 KW Solar PV Grid Connected and there is available area for further addition of Solar PV plant.

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.

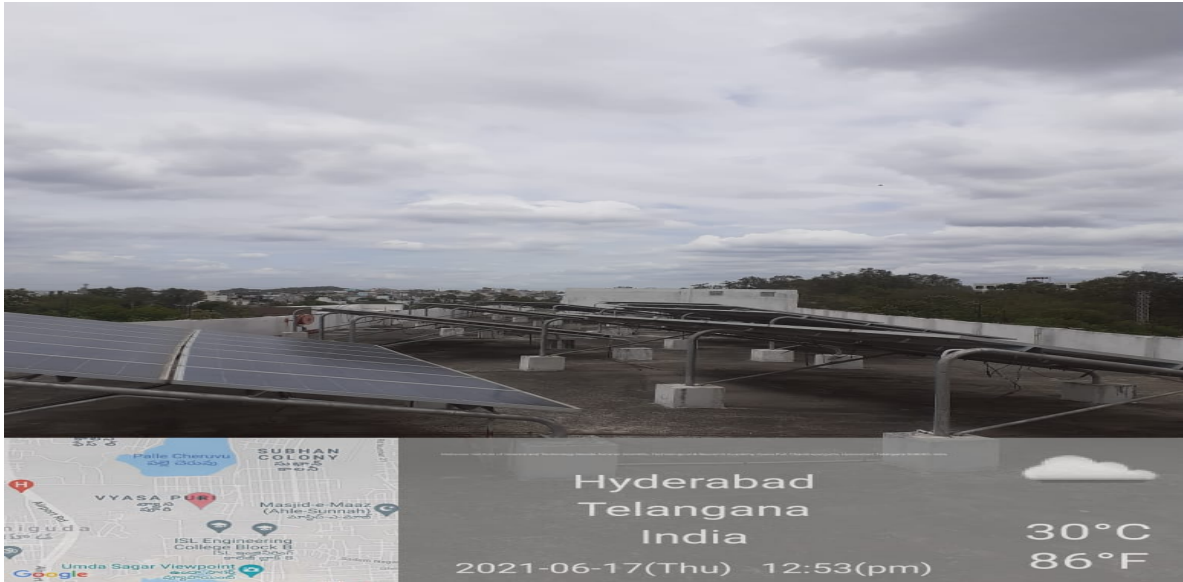
Solar System has generated energy, the energy bills will drop. How much you save on bill will be dependent on the size of the solar system and electricity usage. Moreover, not only will you be saving on the electricity bill, there is also a possibility to receive payments for the surplus energy that 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 and further enhancement of solar PV is in the pipe line.

Solar PV Installed at the campus



Meters

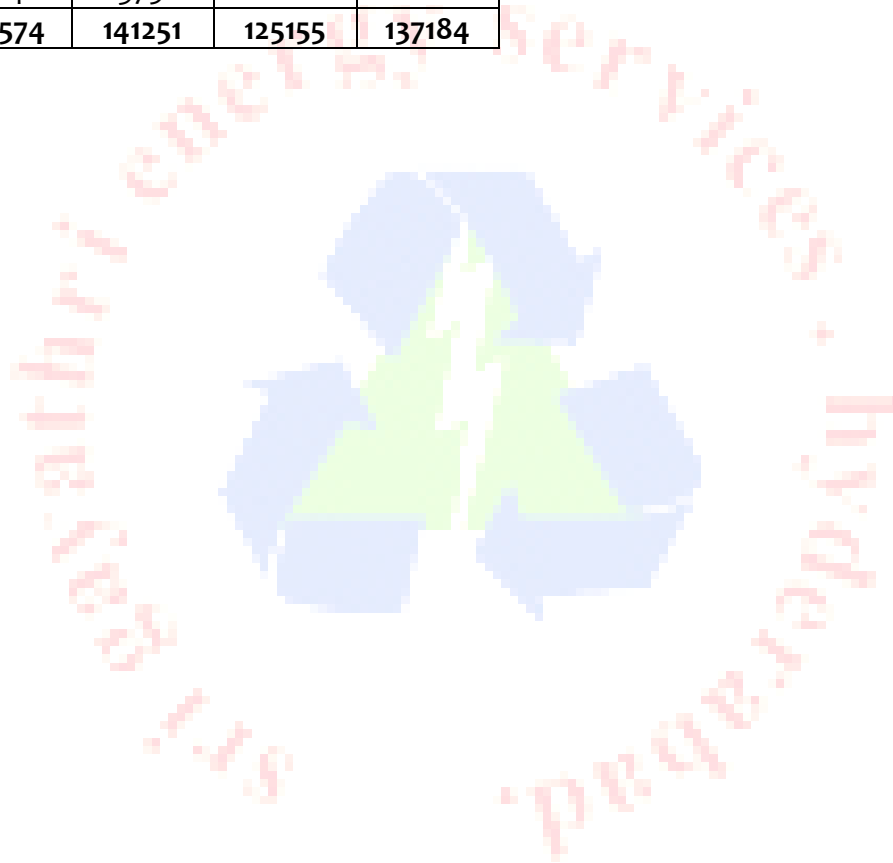


Meters -1



Energy Generation Details of the 100 KW Solar PV Plant

Panels Group	Power Generation in KWH			
	2016	2017	2018	2019
1	24058	24967	24927	24478
2	23438	23649	24061	23156
3	22776	23320	23584	22774
4	22114	22820	23035	22029
5	22548	22745	22888	21947
6	23640	23750	6660	22800
Total	138574	141251	125155	137184



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 1545m³/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: Water harvesting Pits proposed to be constructed in this year across the campus and in the process of constructing water drains and interconnecting the same to water harvesting pits to recharge the ground water .

It is recommended to install ECO LOO Toilets to save water approx. 4000 Ltrs /day .

Technological improvement for better Rain Water Harvesting

Rainy Filter Series for Filter Installation Model #1, 2008

The advanced features of Rainy Dual Intensity Filter Series is its capacity to handle loads from 10 to 500 square meters of Rainwater Harvesting capacity of 100 to 400 LPH. The filter can be conveniently used for Harvesting Rainwater for residential, commercial, schools, hospitals, institutions, Government buildings.

Water-saving

Ex. A House with total area of 100 sq. Meters (20x50) = 1,000 sq. ft. with an annual rainfall of 1000mm provides an annual supply of 1,00,000 liters of water per year.

Our Clients

Residential Rainwater Harvesting Systems

At 100 sq. meters (10,000 sq. ft.) area, a house can harvest 10,000 liters of water annually. This is equivalent to 10,000 liters of water. This is equivalent to 10,000 liters of water.

Save Rainwater

www.rainyfilters.com

Dual Intensity Rainwater Harvesting filters™

Save Rainwater

www.rainyfilters.com

Cut section view of Rainy Dual Intensity (DWI) Filter

Special Features

- Dual Intensity Filter works on the principle of reverse & centrifugation.
- The open ended design doesnot allow stagnation of water in corners.
- Works on Gravitational Force/No electricity required.
- Cost Effective and Efficient.
- Compact size and floor mounted.
- Industrial Cleaning Mechanism.
- Automatic Backwash of Impurities.
- No consumables required.
- Flexibility to get connection in any angle and height.
- Label Guide & Manual provided.
- Prevention of Reverse Flow.
- Self Moving Parts, no filter & Back Compacting.

Various applications through 'Rainy' Filters

Various Applications & Capacities of various models of Rainy Filter Series Dual Intensity (DWI) Filter

	Rainy Filter #1	Rainy Filter #2	Rainy Filter #3	Rainy Filter #4
Capacity up to total area	100 sq.meters	200sq.meters	500 sq.meters	1000 sq.meters
Max. capacity of Harvest	1000liters	2000liters	5000liters	10000liters
Working Principle	Centrifugal Force/Gravitational Force			
Power Requirement	None (Work on Natural Force/Gravitational Force)			
Capacity	100 LPH	200 LPH	500 LPH	1000 LPH
Water Treatment	Self-cleaning Mechanism	Self-cleaning Mechanism	Self-cleaning Mechanism	Self-cleaning Mechanism
Water Flow	100liters/min	200liters/min	500liters/min	1000liters/min
Cost	₹ 10,000	₹ 20,000	₹ 50,000	₹ 1,00,000
Chemical/Filter Media	None	None	None	None
Space Requirement	10 sq.m	20 sq.m	50 sq.m	100 sq.m
Material	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Efficiency	99%	99%	99%	99%
Material	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel



PRODUCT SPECIFICATIONS

PRODUCT	DESCRIPTION <small>1 year warranty applies on all ECOLOO products supplied</small>	PURPOSE
	<p>INDOOR/OUTDOOR ECO DELUXE</p> <ul style="list-style-type: none"> • Base: FRP, Weight: 50kg • Dimension without box: 835mm (W) x 865mm (L) x 635mm (H) • Dimension with box: 850mm (W) x 880mm (L) x 665mm (H) • Items included: Toilet Seat, Toilet Lid, Dry Flush, Wind Ventilation Fan, Drop Bed. 	<ul style="list-style-type: none"> • Indoor purpose • Inside transportation • Off grid housing (i.e. Ger Tent) • One family per house
	<p>INDOOR/OUTDOOR ECO BASIC</p> <ul style="list-style-type: none"> • Material: FRP, Weight: 90kg • Type: ECO BASIC • Dimension: 1100mm (W) x 750mm (H) x 1350mm (L) • Capacity: <ul style="list-style-type: none"> ◦ Upper: 450L (Solid) ◦ Bottom: 250L (Liquid) • Items included: Toilet Seat + Lid, Dry Flush, Wind Ventilation Fan, Drop Bed. (Mechanical Waste Cover is Optional) 	<ul style="list-style-type: none"> • Outdoor purpose • Schools • Up to 15 visits / hour, 24/7 (200+ visits/day) • Can be used for indoor for bigger toilet room with partitions • Proper housing or structure can be placed around the toilet base for outdoor purpose
	<p>OUTDOOR ECO CLASSIC</p> <ul style="list-style-type: none"> • Type: ECO BASIC + Structure • Total Weight: 160kg, Knock Down (D-I-Y) • Structure: Light Composite 38 mm insulated Panels (normally used for cold rooms and trucks), Door, Roof • Optional: Mechanical Waste Cover, Solar Panel & Lighting, Hand bidet, Hand grab, Toilet Paper Holder, Hand Sanitizer, Fertilizer Pump . etc. • Dimension: 1100mm (W) x 2200mm (H) x 1350mm (L) 	<ul style="list-style-type: none"> • Outdoor purpose • D-I-Y Structure can be installed within less than 1 hour • Up to 15 visits / hour, 24/7 (200+ visits/day)
	<p>OUTDOOR ECO TENT</p> <ul style="list-style-type: none"> • Type: ECO BASIC + TENT • Total Weight: 150kg, Knock Down (D-I-Y) • Structure: Waterproof, Quality Plastic (double layers), Quality Zipper, Painted Galvanized Pipe Pillars • Dimension: 1100mm (W) x 2200mm (H) x 1350mm (L) 	<ul style="list-style-type: none"> • Outdoor purpose especially for disaster relief and military • D-I-Y Structure can be installed in 10 minutes • Up to 15 visits / hour, 24/7 (200+ visits/day)

Waste Management:

1. **Bio Waste** – Mostly Food Waste is generated from the cooked food at the campus in the canteen. 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.

2. **Non Bio Waste** – Plastic Bottles / Waste Paper / Cardboards/ Batteries etc

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 :Dust bins were provided for the waste disposal the same is collected daily once and handed over the Municipal corporation. The College is having an MOU with M/s Urban Rebox, Hyd to dispose the E Waste. Every year the agency will come and pick up the E waste and dispose it in environmental friendly way.

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.

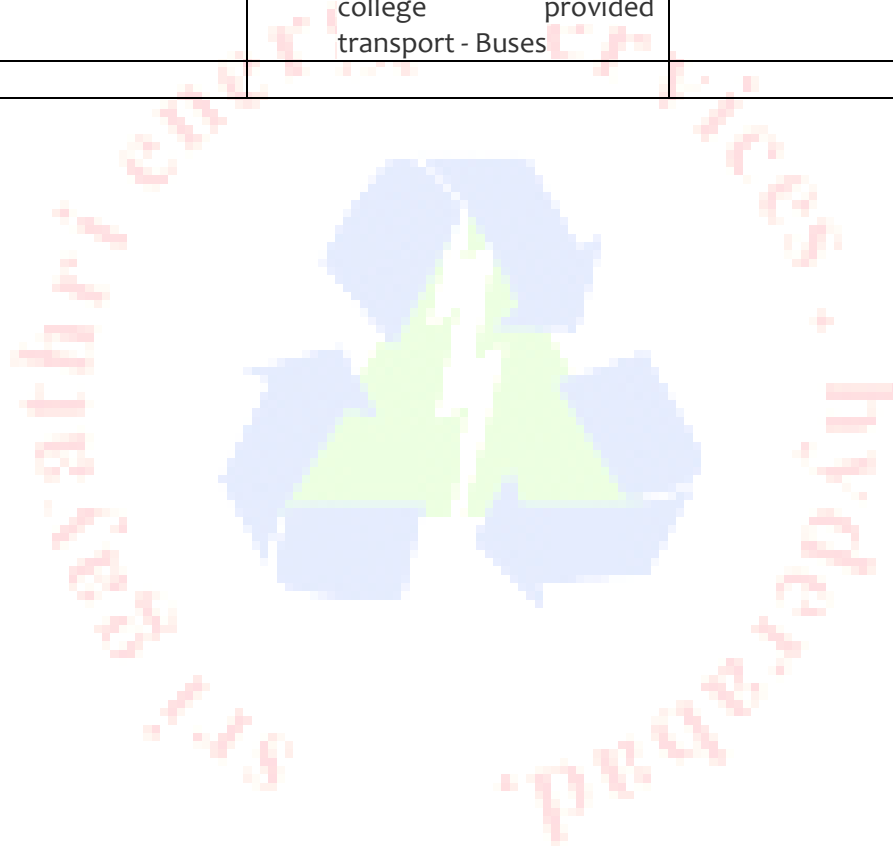
Present Status : The College is having an MOU with M/s Urban Rebox, Hyd to dispose the E Waste. Every year the agency will come and pick up the E waste and dispose it in environmental friendly way.

Carbon Foot Print

Total students: 1421 / Faculty:180 / Staff- 66 /Buses: 11/ Individual Cars -10 / Two Wheelers - 250

The detailed carbon foot print calculations are given 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.



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 0.628 Acres campus is having the Green cover.	A Continual plantation of trees is going on . It is recommended to increase the Green Cover further to another 1.14 Acres in coming years.
Renewable Energy – Harness Solar Power	A Grid Connected Solar plant is installed with capacity of 100 KW	The Solar PV plant is functional and exporting clean energy to the grid . It is recommended to explore the vacant areas to increase the solar roof top plants to harness more solar energy.
Water Conservation – i) Rain Water harvesting ii) Eliminating Leaking Taps iii) Interconnection of Water Soaking pits to Rain harvesting Pits iv) Avoid Misuse/wastage of water	i) Rain water Harvesting pits construction under process ii) A Dedicated Team working on the repairing the leaking taps across the campus iii) Interconnection process is initiated iv) RO Plant is installed for providing safe drinking water, which generates RO reject water, this water is used for Gardening. v) Encourage to reduce the water usage	They will soon become functional Most of the taps are repaired, It is recommended to install taps with reduced water flow like shower / Mist. Reward the personnel informing Leaky taps, Paste Labels where ever water is expected to be wasted. Process initiated It is recommended to Install a Aqua Conditioner to reduce the RO Reject. Recommended to install Bio Toilets/Water Less Toilets like ECO Loo which reduces water usage and generates fertilizer from human waste and Natural

	vi) Water Sprinkler system installation is initiated to save water	liquid from the Urine which can be reused for gardening. Under process
Waste Management		
i) Bio Waste	i) The Bio Waste – Food Waste generated in the canteen is proposed to be feed stock for Bio Gas plant .	i) Proposed to install Bio gas plant in coming years
ii) Non Bio Waste	ii) Paper Waste – Dust bins are placed across the campus .	ii) The Urban Rebox pick up the waste paper and recycle it
	iii) Non Bio Waste – Plastic Bottles Waste /Metals waste is being collected in the dust bins placed across the campus .	iii) It is proposed to install plastic bottle crusher, which can be sold as a feed stock for the Plastic industry.An agreement is in place with M/s Urban Rebox Hyd to pick up the Non Bio waste every month
iii) E Waste	iv) Non Bio Waste – Sanitary napkins	iv) Installed Sanitary napkin incinerator at ladies Toilet to avoid choking of toilets and wastage of water.
	v) E Waste – All Electronic Junk is generated in the campus in the form of Used Computer key boards/ Mouses/ CPU's/ Damaged Printers etc	v) An agreement is in place with M/s Urban Rebox Hyd to pick up the E waste every month

References

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4. Urban Green Guide Lines –2014 , Min. of Urban Development , Govt. Of India
5. Roof top Rain Water harvesting Guidelines – IS 15797 – 2008
6. Guidelines For Improving Water Use Efficiency in Irrigation, Domestic & Industrial Sectors as Per IS – 1172 - 1993
7. IEC 62891 Solar PV For Grid Interactive system, IEC 61853- Part 1/ IS 16170 : Part 1 for 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>

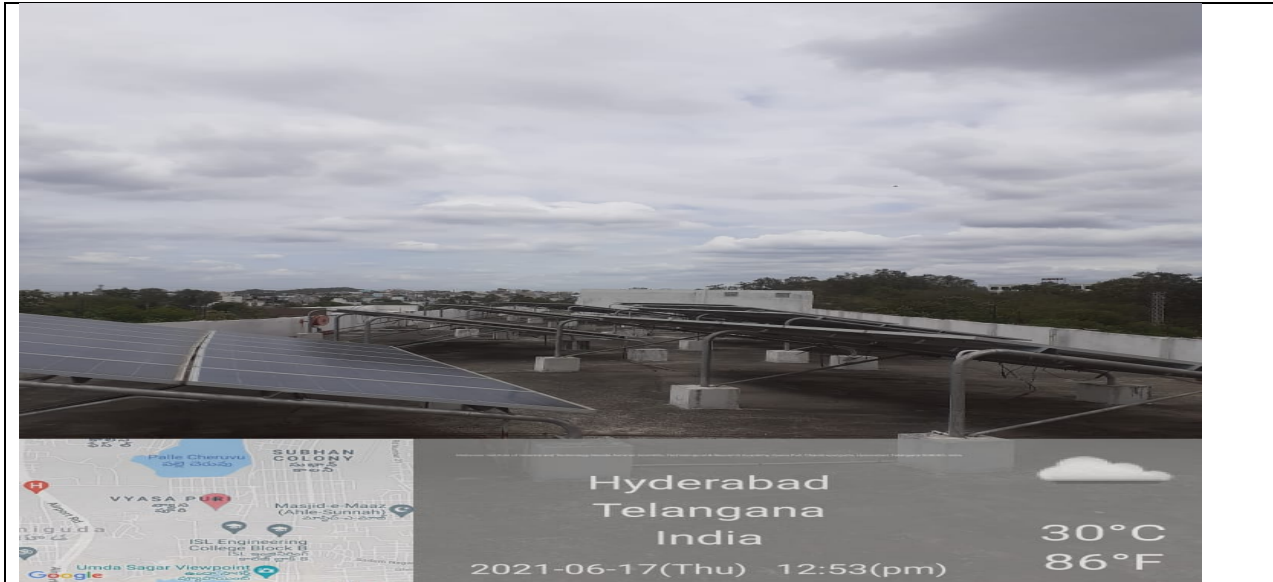


Visuals of Plantation of Trees across the campus

A Detailed Pictures are attached with this report



Grid Connected Solar PV installed at the Campus



Solar PV Panels on roof top

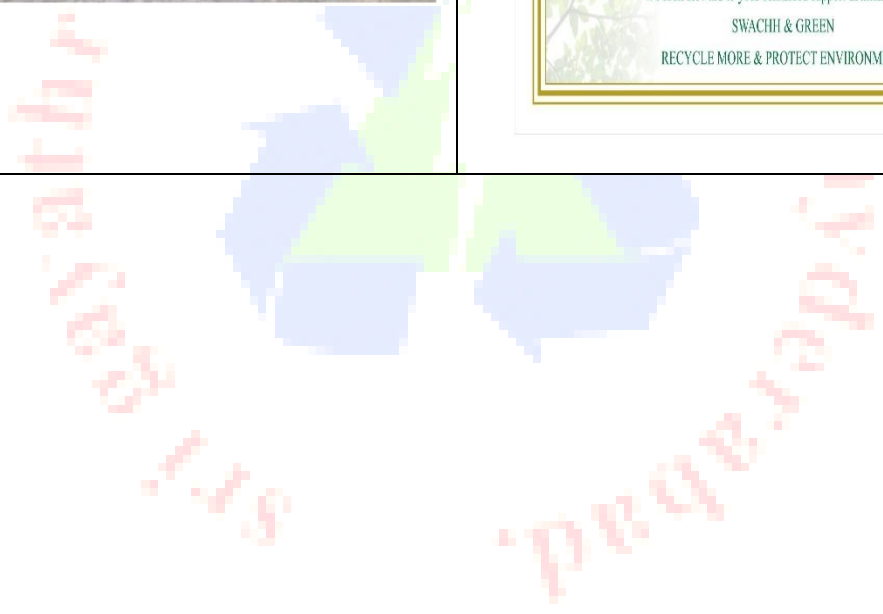


Solar PV Inverters

Water Conservation & Rain Water Harvesting pits



Waste Collections Bins



Waste Management – Bio Degradable

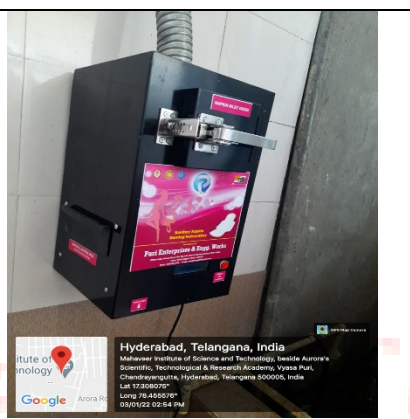
A Bio Gas plant is proposed to be installed very shortly, the procurement is in process and expected to be completed in couple of months which will help in reducing the food waste generated in the campus to be utilized completely.(Details Enclosed)



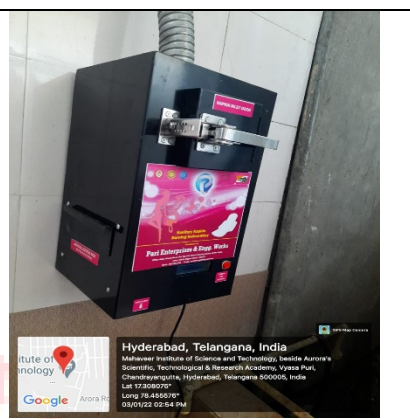
Bio Degradable Waste – Sanitary pads – Incinerators installed in Female Wash rooms for environmental friendly disposal



Sanitary napkin Incinerator in ladies toilet MIST BLOCK SECONDFLOOR



Sanitary napkin Incinerator in ladies toilet MIST MAIN BLOCK GROUND FLOOR



Sanitary napkin Incinerator in ladies toilet MIST NEW BLOCK GROUND FLOOR

Bio- Degradable Waste – Paper

Policy Statement : MISTs key operations have very less impact on the environment degradation. The college is very conscious of generating less waste and recycling it by passing it through a system that enables the used material to be reused ensuring that less natural resources are consumed. We have an MOU with ITC franchisee URBAN REBOX IT PVT Ltd for promoting zero waste management (recycle, upcycle of e-waste, plastic and solid waste). Student Volunteers Constructed Meditation Cabin in NSS room with used water bottles in this way we are encouraging the reuse of solid waste. Solid Waste Management: The waste is generated by all sorts of routine activities carried out in the College that includes paper, plastics, glass, metals, foods, etc. The waste is segregated at each level and source. The administrative supervisor in each block ensures that the waste in each floor is collected at designated time intervals. The floor dustbins are emptied in movable containers/dustbins provided for each block and is taken to the dumping yard provided by the college. From kitchen waste only vegetables peel (not leftover food) fruit juice point waste and trodden leaves use for generation of gas in Bio gas plant located at college canteen. The slurry produced by biogas plant is used as organic manure for plants

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. Mahaveer Institute of Science & Technology (MIST) and ITC franchisee URBAN REBOX IT PVT Ltd joined hands together towards 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.

An agreement has been made with M/s Urban Rebox, Hyd for disposal of the E Waste which are mentioned below (A detailed MOU is enclosed)

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 Mahavir Institute has total members – 1667 , Students – 1421 staff- 246 (Teaching - 180 + Non Teaching- 66) the Co2 emission is 5761 Kg/day

Members by Two Wheeler – 250 – Co2 emission is 376.25 Kg /day

Members by College Bus – 450 - Co2 emission is 1363.5 Kg/day

Members by public Transport – 942 - Co2 emission is 3805 Kg/day

Members by Car Pooling – 20 – Co2 emission is 162.6 Kg/day

Members by Individual Car -5 – 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

Mahaveer Institute of Science and Technology, Bandlaguda Hyderabad

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)				



MEMORANDUM OF UNDERSTANDING

This **Memorandum of Understanding** is made and executed on **01st March' 2019** at **Hyderabad**.

BY AND BETWEEN

Mahaveer Institute of Science & Technology, Vyasapuri, Bandlaguda, Keshavagiri (P.O), Hyderabad-500005, its administrators, assigns and successors represented by Dr. Shankar Ram, Principal, who is duly authorized to sign and execute the MoU.

Being the First Part
AND

Urban Rebox IT Private Ltd, an authorized agency of ITC having its principal office situated at No. # 11-3-362/3, Mohammadguda, Secunderabad, Hyderabad-500061 and represented by Mr. D. Sai Krishna, Manager referred as "**Rebox**"

Being the Second Part

Whereas Mahaveer Institute of Science & Technology has agreed to collect and give away the dry recyclable waste including any kind of paper waste and old records generated in its college and form Swachh WOW Hyderabad Chapter.

1. NOW THIS MOU WITNESSETH AS UNDER:

This is an agreement for a synergic alliance between Mahaveer Institute of Science & Technology, Vyasapuri, Bandlaguda, Keshavagiri (P.O), Hyderabad-500005 and Rebox for the social cause of recycling of Dry Waste and Environment Protection through recycling.

2. Time period: This MOU shall be for a period of one year commencing from the date of signing of this MOU.

3. Roles and Responsibilities of Mahaveer Institute of Science & Technology:

1. To ensure source segregation of dry and wet waste at College premise through its Teaching staff, housekeeping staff and Students.
2. Mahaveer Institute of Science & Technology will give away any kind of paper waste, dry recyclable waste and old records to Rebox at price agreed mutually. Rebox will pay Rs.7/kg for any kind of Paper waste and Old records/Dull white paper will pay Rs. 3/Kg, for metal scrap Rebox shall pay Rs. 9/Kg and for plastic waste Rebox will pay Rs. 4/Kg.
3. Mahaveer Institute of Science & Technology shall form Swachh WOW Hyderabad Chapter in the college with Student Volunteers and adopt nearby Schools or Colonies to promote Source Segregation through student volunteers. MARI shall provide participation certificates to the students.
4. Mahaveer Institute of Science & Technology shall provide students for Internship in WOW Program. MARI shall provide internship certificate to the students.

URBAN REBOX IT PVT.LTD.

#11-3-362/3, MR Complex, Srinivas Nagar, Padmarao Nagar,
Secunderabad, Telangana State - 500 061
GSTIN: 36AACCU3664R1ZM





5. Mahaveer Institute of Science & Technology shall motivate students to bring dry recyclables like paper, plastic, metal etc. from their home and donate to WOW initiative.
6. Mahaveer Institute of Science & Technology will put-up color-coded bins for waste segregation at different points in College premises.

4. Roles and Responsibilities of URBAN REBOX:

1. ITC-MARI will train the students and housekeeping staff on source segregation and through them inculcate the habit of source segregation among the other students.
2. Rebox will collect dry recyclable waste and old records from College and bring to the Dry Resource Collection Centre (DRCC) without any spillage.
3. Rebox will organize sorting of the dry waste into different categories, baling, and appropriate disposal of dry waste.
4. Rebox shall coordinate with ITC and undertake necessary measures for dispatch of the sorted recyclables for recycling at its own cost.
5. Rebox will make payment to Mahaveer Institute of Science & Technology directly into their accounts for the dry recyclable waste collected against the accurate weighment and the type or category of the dry waste. The payment shall be made no later than 15 days from the date of purchase of dry waste from the waste collector. Franchisee on the request of Mahaveer Institute of Science & Technology may give New Notebooks and Stationery against the value of dry recyclable waste lifted.

5. Performance of Obligations

1. The details laid out in this MOU, notwithstanding the essence and spirit of this MOU is an understanding between Mahaveer Institute of Science & Technology and Rebox.
2. Any notice or other communication under or in connection with this agreement shall be in writing in the English language and shall be delivered personally or sent by way of e-mail to the party due to receive the notice or communication at its address set out in this contract or such other address as either party may specify by notice in writing to other.

ADDRESS FOR COMMUNICATION:

Following are the address to which all notices shall be sent:

For URBAN REBOX:

Urban Rebox IT Pvt Ltd
H.No. #11-3-362/3,
Mohammadguda, Secunderabad,
Hyderabad - 500061
Phone No.9000479471
Email ID: urbanreboxit@gmail.com

For Mahaveer Institute of Science & Technology,

Vyasapuri, Bandlaguda, Keshavagiri (P.O),
Hyderabad-500005
Phone No:
Email ID:

URBAN REBOX IT PVT.LTD.

#11-3-362/3, MR Complex, Srinivas Nagar, Padmarao Nagar,
Secunderabad, Telangana State - 500 061
GSTIN: 36AACCU3664R1ZM





6. Execution of this Agreement shall be deemed to be
 - a) A confirmation by both the parties that no benefit, either in cash or kind has been provided by either party to the other party or to any officer or employee, or any relative/ associate of any officer or employee of either party or of any of their associate institutions/companies in order to enter into this Agreement, and
 - b) An undertaking by both the parties not to provide any benefit, either in cash or kind to any officer/employee/relative/associate of any officer or employee of either party as reward or consideration either for entering into this MOU or other matter relating to this Agreement.

7. **Other Terms:**

Force Majeure: Neither party shall be liable for damages for any delay or failure to perform its obligations here under, if such delay or failure is due to reasons beyond the control of the concerned party including without limitation, strikes, riots, wars, fires, epidemics, quarantine restrictions, unusually severe weather, earth quakes, explosions, acts of God or state or any public enemy or acts mandated by applicable laws, regulation or order, whether valid or invalid, of any Governmental body.

8. **Dispute Resolution:** It is understood by both the parties that this Agreement is for a social cause and not to make any profit out of the understanding. The Parties covenant that they will comply with all applicable laws and regulations in their conduct pursuant to this Agreement. Any dispute arising out of this Agreement shall be first attempted to settle amicably between the parties.

9. **Arbitration**

Any dispute which is not resolved amicably shall be finally settled by binding arbitration in respect to the matters concerning to the MOU with the Sole Arbitrator to be appointed by the mutual consent of both the parties. The Parties agree that the decision or award resulting from arbitration shall be final and binding upon the Parties.

Pending the submission of and/or decision on a dispute, the Parties shall continue to perform their respective obligations under this Agreement without prejudice to a final adjustment in accordance with such arbitration award

10. **Governing and Jurisdiction:** This Agreement is subjected to the Jurisdiction of Courts at Hyderabad.

- Both the parties shall agree that it will not make use of, disseminate, or in any way disclose any confidential information to any person, firm or business. Furthermore, the existence of any discussions, negotiations or agreements in progress between the parties shall not be released to any form of public media without written approval of both parties.

11. **Amendments**

This Agreement and the Schedules together constitute a complete and exclusive understanding of the terms of the Agreement between the Parties on the subject hereof and

URBAN REBOX IT PVT.LTD.

#11-3-362/3, MR Complex, Srinivas Nagar, Padmarao Nagar,
Secunderabad, Telangana State - 500 061
GSTIN: 36AACCU3664R1ZM





no amendment or modification hereto shall be valid and effective unless agreed to by all the Parties hereto and evidenced in writing.

12. NOTICE /Termination

Any notice required to be given hereunder shall be given in writing at the address of each party set forth as below in this agreement or to such other address either party may substitute by written notice to the other. Either party may terminate this Agreement by giving 30 days written notice to the other party.


In witness whereof the parties hereto have signed this agreement on the day, month and year mentioned hereinbefore.

For Mahaveer Institute of Science & Technology

For URBAN REBOX

Principal

Mahaveer Institute of Science & Technology
Vyasapuri, Bandlaguda, Keshavagiri (P.O),
Hyderabad-500005


D Sai Krishna
Operations Manager



Witness:

1.

2.

URBAN REBOX IT PVT.LTD.

#11-3-362/3, MR Complex, Srinivas Nagar, Padmarao Nagar,
Secunderabad, Telangana State - 500 061
GSTIN: 36AACCU3664R1ZM





RO PLANT

Green Audit
of



M/s Mahaveer Institute of Science and Technology,
Vyasapuri, Bandlaguda, Post: Keshavgiri, Hyderabad- 500 005, Telangana

2021-22

By

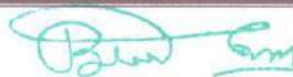


SRI GAYATRI ENERGY SERVICES

we support you conserve

Flat :401, SS Enclave, 2-1-255, St. No:14, Nallakunta, Hyderabad, M:9848050598

Email:srigayatrienergyservices@gmail.com



PRINCIPAL
MAHAVEER

INSTITUTE OF SCIENCE & TECHNOLOGY
Bandlaguda, Hyd-500 005

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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 **Mahaveer Institute of Science and Technology** ,Vysapuri, Bandlaguda, Hyderabad, Telangana for entrusting the Green Audit work of their College.

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

Smt. S. Jaya lakshmi	Chairman
Sri S. Surender Reddy	Secretary
Dr. Sri HSN Murthy	Director
Dr. Sri .B.V.Sanker Ram	Principal

Disclaimer

Warranties and Liability

While every effort is made to ensure that the content of this report is accurate, the details provided “as is” makes no representations or warranties in relation to the accuracy or completeness of the information found on it. While the content of this report is provided in good faith, we do warrant that the information will be kept up to date, be true and not misleading, or that this report will always (or ever) be available for use.

While implementing the recommendations site inspection should be done to constitute professional approach and adequacy of the site to be established without ambiguity and we exclude all representations and warranties relating to the content and use of this report.

In no event We will be liable for any incidental, indirect, consequential or special damages of any kind, or any damages whatsoever, including, without limitation, those resulting from loss of profit, loss of contracts, goodwill, data, information, income, anticipated savings or business relationships, whether or not advised of the possibility of such damage, arising out of or in connection with the use of this report..

Exceptions

Nothing in this disclaimer notice excludes or limits any warranty implied by law for death, fraud, personal injury through negligence, or anything else which it would not be lawful for to exclude.

We trust the data provided by the M/s **Mahaveer Institute of Science and Technology, Vysapuri, Bandlaguda**, Hyderabad, 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

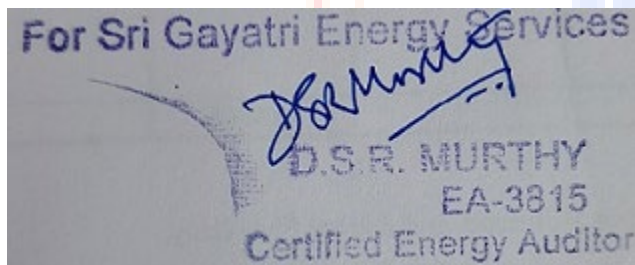
Shri Durga Raoa Engineer

Shri Sai Ganesh Engineer



CERTIFICATE

We here by certify that we carried out Green Audit in the M/s **Mahaveer Institute of Science and Technology**, Vysapuri, Bandlaguda Hyderabad, Telangana during 27 Dec 2021 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 **Mahaveer Institute of Science and Technology** Hyderabad, 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 3236 Sq M which is mandatory for mitigating the Global warming.(Photos enclosed)
3. The Grid Connected Solar PV is installed as part of Renewable energy initiative to the tune of 100 KW in the campus. The Energy saving due to the Solar PV plant is consistently 3 % for last 5-6 years. There is area available for additional solar plant . It is proposed to install further Solar PV plant in near future. There by reducing the energy dependence on the Grid .
4. The Water conservation measures are already in place and further advancements are going on like Water harvesting pits are operational at individual buildings rain water soak pits are under construction so that the same can be interconnected to the Water Harvesting pits .
5. Water is treated in in RO plant, safe drinking water is provided to students and faculty, waste water is utilized for watering the plants so that the water wastage can be minimized.
6. Waste Management is segregated in to three categories like
 - i) Bio Degradable Waste (Food Waste) is fed into a Biogas plant of capacity 1.5 M³ installed in the campus to generate Bio gas and can be used for cooking in the campus itself . The waste slurry coming out of biogas plant is utilized as manure for plants and trees.
 - ii) Non Bio Degradable Waste (Plastic/Papers and 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 (An MOU signed-copy enclosed)
 - iii) 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)
7. It can be concluded that the Green Audit initiatives are started and College Management recognized the importance and taking proactive steps towards sustainable environment.
8. It is proposed to install “Agnisumukh ” for improving the burner and fuel efficiency .(Details are given in Annexure)
9. To treat the Waste Water and recycle it, the Institute has proposed to install STP so that the water wastage can be minimized.

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

As an Institute committed to quality education, MIST aims at providing learning with a technology-edge. It endeavors to provide consistent training to its students to help them evolve as competent professionals in the highly competitive world. Right from its inception in 2001, it has been tuning itself to meet this objective.

A new civilization is emerging in our lives. This new civilization brings with it a new way of working. Millions are already tuning their lives to the rhythms of tomorrow.

The technological revolution and the forces of globalization are changing the very functioning of the organizations significantly in recent years.

Success nowadays, requires not only the ability to perform according to the requirements of the position, but also the ability to adjust and get along as a member of a working team. Two critical aspects of preparation for success in the workplace are Education and Training, so that you will have the required knowledge, skills and a high level of self-motivation including initiative and responsibility.

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 0.799 acres of Tree plantation out of 7.19 Acres of the campus is having tree plantation and heading for area of Greenery

Renewable Energy: 100 KW Solar PV Grid Connected in the campus and there is additional available area for further addition of Solar PV plant.

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.

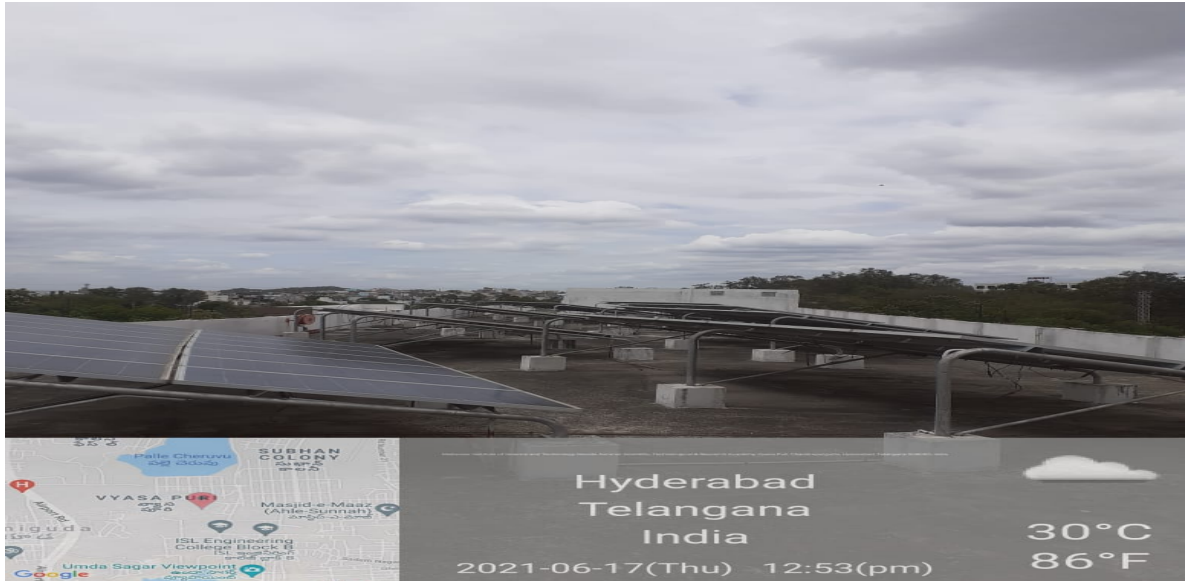
Solar System has generated energy, the energy bills will drop. How much you save on bill will be dependent on the size of the solar system and electricity usage. Moreover, not only will you be saving on the electricity bill, there is also a possibility to receive payments for the surplus energy that 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 and further enhancement of solar PV is in the pipe line.

Solar PV Plant





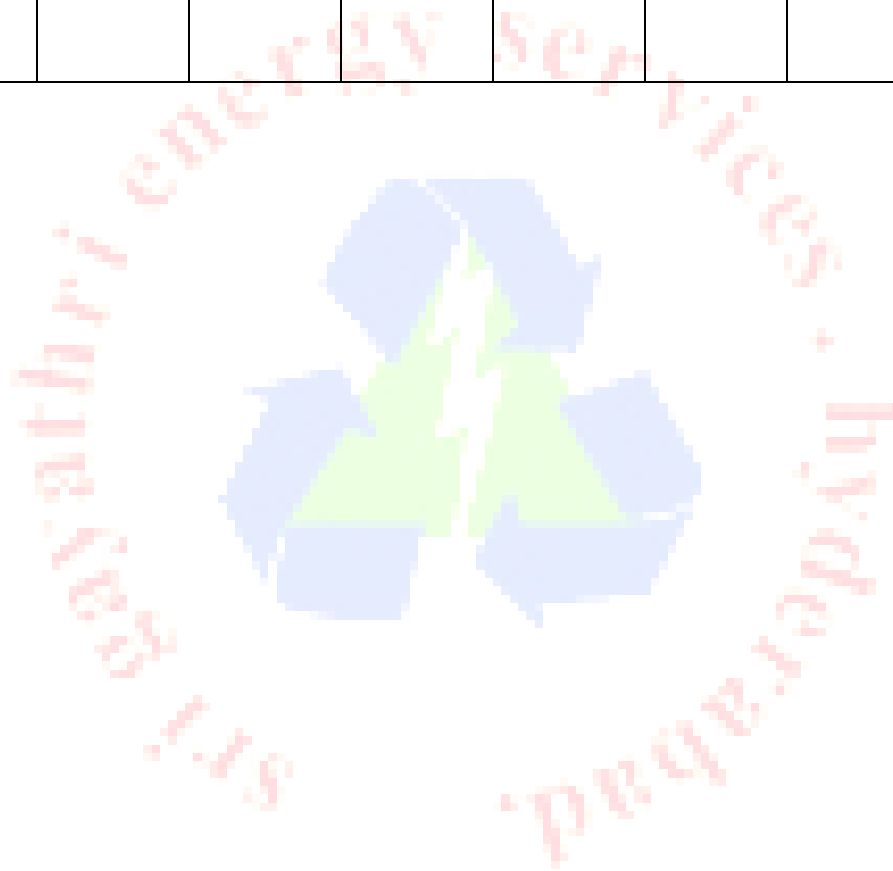
Energy Generation data of the Solar PV Plant : This plant resulted in an energy saving of approx. 3% of the total energy consumption of the college.

Panels Group	Power Generation in KWH						Total
	2016	2017	2018	2019	2020	2021 as on 17062021	
1	24058	24967	24927	24478	21900	9900	130230
2	23438	23649	24061	23156	22142	9750	126196
3	22776	23320	23584	22774	22055	10803	125312
4	22114	22820	23035	22029	21890	10509	122397
5	22548	22745	22888	21947	21514	10042	121684
6	23640	23750	6660	22800	3025	10429	90304
Total	138574	141251	125155	137184	112526	61433	716123

month	Power consumption in KWH						Monthly Total power(kwh)
	2016	2017	2018	2019	2020	2021	
Jan	3024	3000	3000	3000	3000	3000	18024
Feb	3196	4375	3000	3000	3170	3000	19741
Mar	5640	3000	7603	7793	-	3000	27036
Apr	3542	3000	3895	6021	-	3000	19458
May	6520	4133	3558	5367	-	3000	22578
Jun	6710	3000	3020	3113	-	3000	18843
Jul	5252	3000	8071	7742	3000	-	27065
Aug	5210	5046	11775	9747	3000	-	34778
Sept	5993	4975	9428	10350	3000	-	33746
Oct	3000	5768	8280	4807	15216	-	37071
Nov	3000	4333	6220	7222	3000	-	23775
Dec	3000	3000	3633	5738	3000(normal)	-	15371
Total	48877	46630	71483	73900	36386	18000	295276

Table.3.% of Power saving yearly

Year	2016	2017	2018	2019	2020	2021	Total
Main power consumption(kwh)	48877	46630	71483	73900	36386	18000	295276
Total power generation by solar panel	138574	141251	125155	137184	112526	61433	716123
Total Power in KWH	187451	187881	196638	211084	148912	79433	1011399
% of Power saving yearly	73.92545 252	75.18109 867	63.64741 301	64.9902 4085	75.5654 3462	77.339 295	Avg % power savings 71.77482



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 1545m³/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: Constructed Water harvesting Pits 4 No's constructed in this year across the campus and in the process of constructing water drains and interconnecting the same to water harvesting pits to recharge the ground water

Waste Management:

1. **Bio Waste** – Mostly Food Waste is generated from the cooked food at the campus in the canteen. 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.

2. **Non Bio Waste** – Plastic Bottles / Waste Paper / Cardboards/ Batteries etc

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 :Dust bins were provided for the waste disposal the same is collected daily once and handed over the Municipal corporation. The College is having an MOU with M/s Urban Rebox, Hyd to dispose the E Waste. Every year the agency will come and pick up the E waste and dispose it in environmental friendly way. Sanitary napkin burners installed in ladies toilets for safe disposal of sanitary napkin

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.

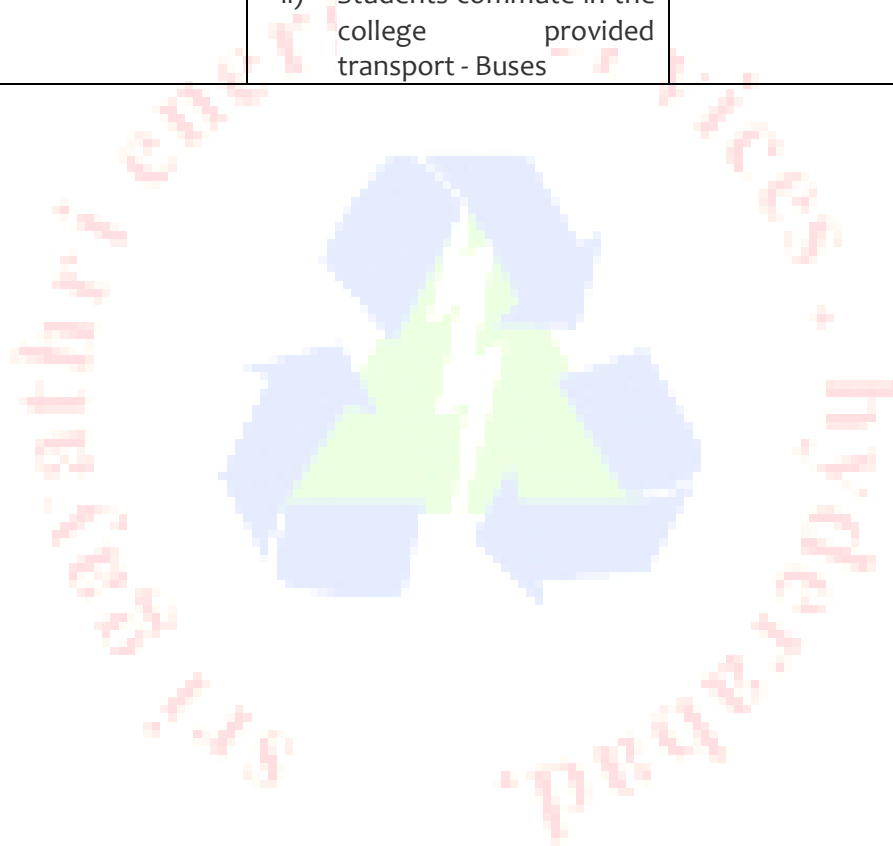
Present Status : The College is having an MOU with M/s Urban Rebox, Hyd to dispose the E Waste. Every year the agency will come and pick up the E waste and dispose it in environmental friendly way.

Carbon Foot Print

Total students: 1487 / Faculty:180 / Staff- 59 /Buses: 11

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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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 1.129 Acres campus is having the Green cover.	A Continual plantation of trees is going on . It is recommended to increase the Green Cover further to another 1.5 Acres in coming years.
Renewable Energy – Harness Solar Power , Wind Power etc	A Grid Connected Solar plant is installed with capacity of 100 KW	The Solar PV plant is functional and exporting clean energy to the grid . It is recommended to explore the vacant areas to increase the solar roof top plants to harness more solar energy.
Water Conservation – i) Rain Water harvesting ii) Eliminating Leaking Taps iii) Interconnection of Water Soaking pits to Rain harvesting Pits iv) Avoid Misuse/wastage of water	i) Rain water Harvesting pits in place ii) A Dedicated Team working on the repairing the leaking taps across the campus iii) Interconnection process is initiated iv) RO Plant is installed for providing safe drinking water, which generates RO reject water, this water is used for Gardening. v) Encourage to reduce the water usage vi) Water Sprinkler system installation is initiated to save water	They are functional Most of the taps are repaired, It is recommended to install taps with reduced water flow like shower / Mist. Reward the personnel informing Leaky taps, Paste Labels where ever water is expected to be wasted. Process initiated It is recommended to Install a Aqua Conditioner to reduce the RO Reject. 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
Waste Management		
i) Bio Waste	i) The Bio Waste – Food Waste generated in the canteen is proposed to be feed stock for Bio Gas plant	i) Bio gas plant installed and functional.
ii) Non Bio Waste	ii) 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.	ii) It is proposed to install plastic bottle crusher, which can be sold as a feed stock for the Plastic industry. iii) Installed Sandy (Sanitary napkin crusher at ladies Toilet) to avoid choking of toilets and wastage of water. An agreement is in place with M/s Urban Rebox Hyd to pick up the Non Bio waste every month
iii) E Waste	iii) E Waste – All Electronic Junk is generated in the campus in the form of Used Computer key boards/ Mouses/ CPU's/ Damaged Printers etc	iv) An agreement is in place with M/s Urban Rebox Hyd to pick up the E waste every month

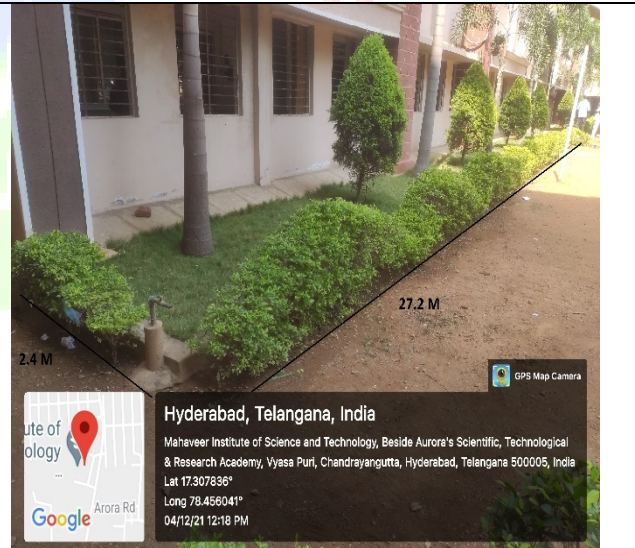
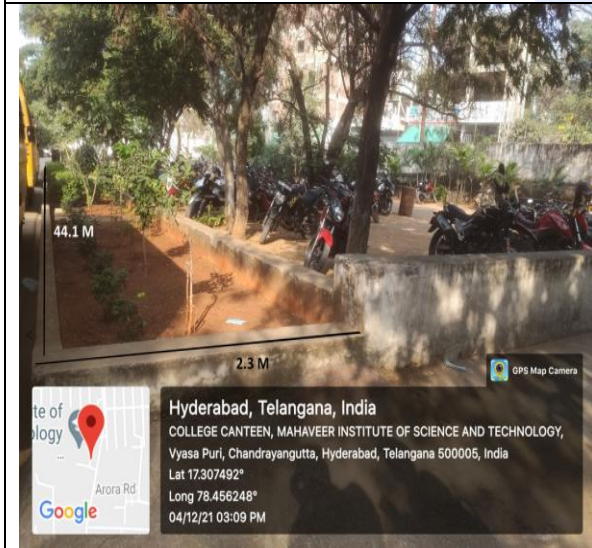
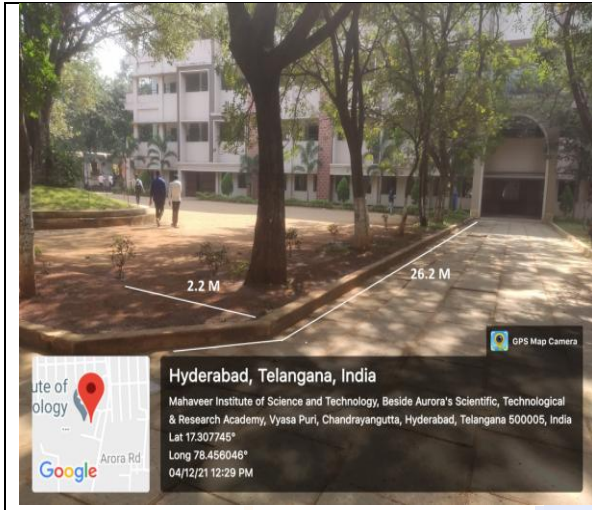
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3. Bio Toilets : <https://www.indiascience.in/videos/bio-toilets-sustainable-solution-for-sanitation-e>
4. Urban Green Guide Lines –2014 , Min. of Urban Development , Govt. Of India
5. Roof top Rain Water harvesting Guidelines – IS 15797 – 2008
6. Guidelines For Improving Water Use Efficiency in Irrigation, Domestic & Industrial Sectors as Per IS – 1172 - 1993
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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>

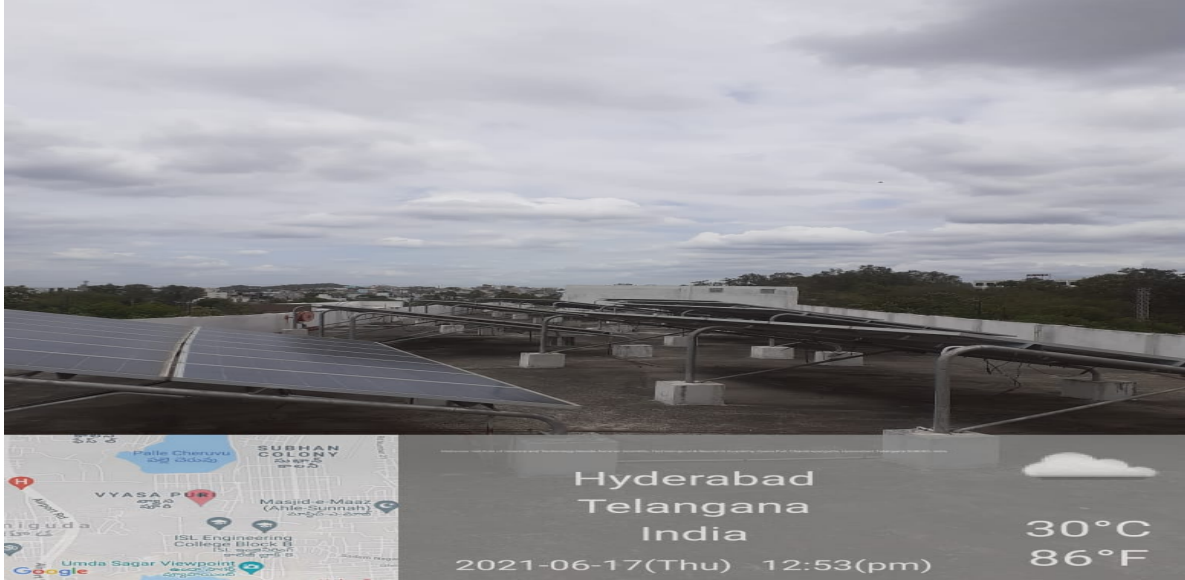


Visuals of Plantation of Trees across the campus

A Detailed Pictures are attached with this report



Grid Connected Solar PV installed at the Campus



Solar PV Panels on roof top



Solar PV Inverters

Solar PV Inverters/

Waste Collections Bins



Waste Management – Bio Degradable

A Bio Gas plant of capacity **5 M³/day** is to be installed very shortly , the procurement is in process and expected to be completed in couple of months which will help in reducing the food waste generated in the campus to be utilized completely.(Details Enclosed)

BIO GAS PLANT



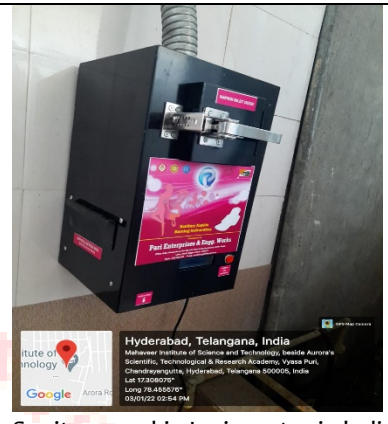
Bio Degradable Waste – Sanitary pads – Incinerators installed in Female Wash rooms for environmental friendly disposal



Sanitary napkin Incinerator in ladies toilet MIST BLOCK SECONDFLOOR




Sanitary napkin Incinerator in ladies toilet MIST MAIN BLOCK GROUND FLOOR



Sanitary napkin Incinerator in ladies toilet MIST NEW BLOCK GROUND FLOOR

Bio- Degradable Waste – Paper

Policy Statement : MISTs key operations have very less impact on the environment degradation. The college is very conscious of generating less waste and recycling it by passing it through a system that enables the used material to be reused ensuring that less natural resources are consumed. We have an MOU with ITC franchisee URBAN REBOX IT PVT Ltd for promoting zero waste management (recycle, upcycle of e-waste, plastic and solid waste). Student Volunteers Constructed Meditation Cabin in NSS room with used water bottles in this way we are encouraging the reuse of solid waste. Solid Waste Management: The waste is generated by all sorts of routine activities carried out in the College that includes paper, plastics, glass, metals, foods, etc. The waste is segregated at each level and source. The administrative supervisor in each block ensures that the waste in each floor is collected at designated time intervals. The floor dustbins are emptied in movable containers/dustbins provided for each block and is taken to the dumping yard provided by the college. From kitchen waste only vegetables peel (not leftover food) fruit juice point waste and trodden leaves use for generation of gas in Bio gas plant located at college canteen. The slurry produced by biogas plant is used as organic manure for plants



MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding is made and executed on 2nd January 2021 at Hyderabad.

BY AND BETWEEN

Mahaveer Institute of Science & Technology, Vyasapuri, Bandlaguda, Keshavnagar (P.O.) Hyderabad-500005. Its administrators, assigns and successors represented by Dr. Shankar Ram, Principal, who is duly authorized to sign and execute the MOU.

Being the First Part

AND

URBAN REBOX IT Private Ltd. an authorized agency of ITC having its principal office situated at No. 4/1-3-362/3, Mohanmaddala, Secunderabad-500005 and Represented by Mr. D. Sai Krishna, Manager referred as "Rebox".

Being the Second Part

Whereas Mahaveer Institute of Science & Technology has agreed to collect and give away the dry recyclable waste including any kind of paper waste and old records generated in its college and from faculty WOW Hyderabad Chapter.

1. **NOW THIS MOU WITNESSETH AS UNDER:**


This is an agreement for a strategic alliance between Mahaveer Institute of Science & Technology, Vyasapuri, Bandlaguda, Keshavnagar (P.O.), Hyderabad-500005 and Rebox for the social cause of recycling of Dry Waste and Environment Protection through recycling.

2. **Time period:** This MOU shall be for a period of one year commencing from the date of signing of the MOU.

3. **Roles and Responsibilities of Mahaveer Institute of Science & Technology:**

- To ensure source segregation of dry and wet waste at College premise through its Teaching staff, housekeeping staff and Students.
- Mahaveer Institute of Science & Technology will give away any kind of paper waste, dry recyclable waste and old records to Rebox at Drive agreed mutually. Rebox will pay Rs. 4/kg for any kind of Paper waste and Old records. Old white paper will pay Rs. 4/kg, for multi color papers shall pay Rs. 10/kg and for plastic waste Rebox will pay Rs. 4/kg. For e-waste Rebox shall pay as per annexure - 1.
- Mahaveer Institute of Science & Technology shall form Swachh WOW Hyderabad Chapter in the college with Student Volunteers and adopt nearby Schools or Colonies to promote source segregation through student volunteers (MARI) special provide participation certificate to the students.
- Mahaveer Institute of Science & Technology shall provide students for Internship in WOW Program (MARI) shall provide internship certificate to the students.

URBAN REBOX IT PVT. LTD.
#11-3-362/3, NR Complex, Srikrishna Nagar, Warangala
Secunderabad, Telangana State - 500 061
GSTIN: 36AACU3648R1ZM



4. Mahaveer Institute of Science & Technology shall provide students for Internship in WOW Program (MARI) shall provide internship certificate to the students.

5. Mahaveer Institute of Science & Technology shall motivate students to bring dry recyclables like paper, plastic, metal etc. from their home and donate to WOW Initiative.

6. Mahaveer Institute of Science & Technology will put up color-coded bins for waste segregation at different points in College premises.

4. **Roles and Responsibilities of URBAN REBOX:**

- ITC-MARI will train the students and housekeeping staff on source segregation and through them motivate the habit of source segregation among the other students.
- Rebox will collect dry recyclable waste and old records from College and bring to the Dry Resource Collection Centre (DRCC) without any charge.
- Rebox will organize sorting of the dry waste into different categories, being and appropriate disposal of dry waste and undertake necessary measures for disposal of Rebox shall coordinate with ITC and undertake necessary measures for disposal of dry waste that are recyclable for recycling at its own cost.
- Rebox will make payments to Mahaveer Institute of Science & Technology into their accounts for the dry recyclable waste collected against the accurate weightment and the type or category of the dry waste. The payments shall be made no later than 15 days from the date of purchase of dry waste from the waste collector. Franchisee on the receipt of Mahaveer Institute of Science & Technology may give 'New Notebooks and Stationery' against the value of dry recyclable waste filled.

5. **Performance of Obligations**


- The details laid out in this MOU, notwithstanding the essence and spirit of the MOU is an understanding between Mahaveer Institute of Science & Technology and Rebox.
- Any notice or other communication under or in connection with this agreement shall be in writing in the English language and shall be delivered personally or sent by way of e-mail to the party due to receive the notice or communication at its address set out in this contract or such other address as either party may specify by notice in writing to the other.

ADDRESS FOR COMMUNICATION
Following are the address to which all notices shall be sent:

For URBAN REBOX:
Urban Rebox IT Pvt Ltd
H No. #11-3-362/3,
Mohanmaddala, Secunderabad,
Hyderabad - 500061
Phone No: 08004747471
Email ID: urbanrebox@gmail.com

For Mahaveer Institute of Science & Technology:
TechnoBuds
Vyasapuri, Bandlaguda, Keshavnagar (P.O.),
Hyderabad-500005
Phone No: 011-2-71-53-91
Email ID: vsp@mahaveer.edu@gmail.com

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Secunderabad, Telangana State - 500 061
GSTIN: 36AACU3648R1ZM



Annexure 1

Below are the items and rates listed:

Sl.No	Description	Price (Rs./Piece)
1	E-waste:	
	CRT Monitors	60.00
	LCD/LED Monitors (working condition)	250.00
	LCD/LED Monitors (Non-working condition)	80.00
	CPU (working condition)	300.00
	CPU (Non-working condition)	160.00
	Keyboard	10.00
	Mouse	1.00
	Dot Matrix Printer	150.00
	Laser Jet Desktop Printer	450.00
	Color/Laser Data (non-working condition)	800.00
	(Processor) Laptop (non-working condition)	1000.00
	Conventional core Laptop (working condition)	1700.00
	(Processor) Laptop (working condition)	60.00
	UPS	15.00
	Cables (per KG)	15.00
	SMPS	10.00
	Head Phones	Winos.

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12. **NOTICE/Termination**

Any notice required to be given hereunder shall be given in writing at the address of each party set forth as below in the agreement or to such other address either party may substitute by written notice to the other. Either party may terminate this Agreement by giving 30 days written notice to the other party.

In witness whereof the parties hereto have signed this agreement on the day, month and year mentioned hereunder:

For URBAN REBOX

For Mahaveer Institute of Science & Technology

Dr. B. Srinivas Reddy
Principal
Mahaveer Institute of Science & Technology

Vyasapuri, Bandlaguda, Keshavnagar (P.O.),
Hyderabad-500005

Witness:

1. _____
2. _____

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Certificate of Appreciation

ITC LIMITED - PAPERBOARDS & SPECIALITY PAPERS DIVISION

Sincerely thank

MAHAVEER INSTITUTE OF SCIENCE AND TECHNOLOGY

for partnering with WOW-Wellbeing Out of Waste, a Nationwide Recycling Initiative of ITC and contributing 2750Kgs of dry recyclable waste for recycling during the period of 2020-21

We look forward to your continued support in making India

SWACHH & GREEN

RECYCLE MORE & PROTECT ENVIRONMENT

Sri Krishna Enterprises
www.sre.com





Certificate of Appreciation

We take great pleasure in awarding certificate of appreciation to

MAHAVEER INSTITUTE OF SCIENCE AND TECHNOLOGY

for contributing 2690 kgs of paper waste to WOW-Wellbeing Out of Waste, A nation wide recycling initiative of ITC. Environmental savings by recycling of above contributed paper waste are 18830 gallons of water, 10760 kilowatts of energy, 6.15 cubic meters of landfill space and reduction of 6.19 mt of Co₂ During the year of 2021-22.

Let us make India Swachh and Green



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. Mahaveer Institute of Science & Technology (MIST) and ITC franchisee URBAN REBOX IT PVT Ltd joined hands together towards 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.

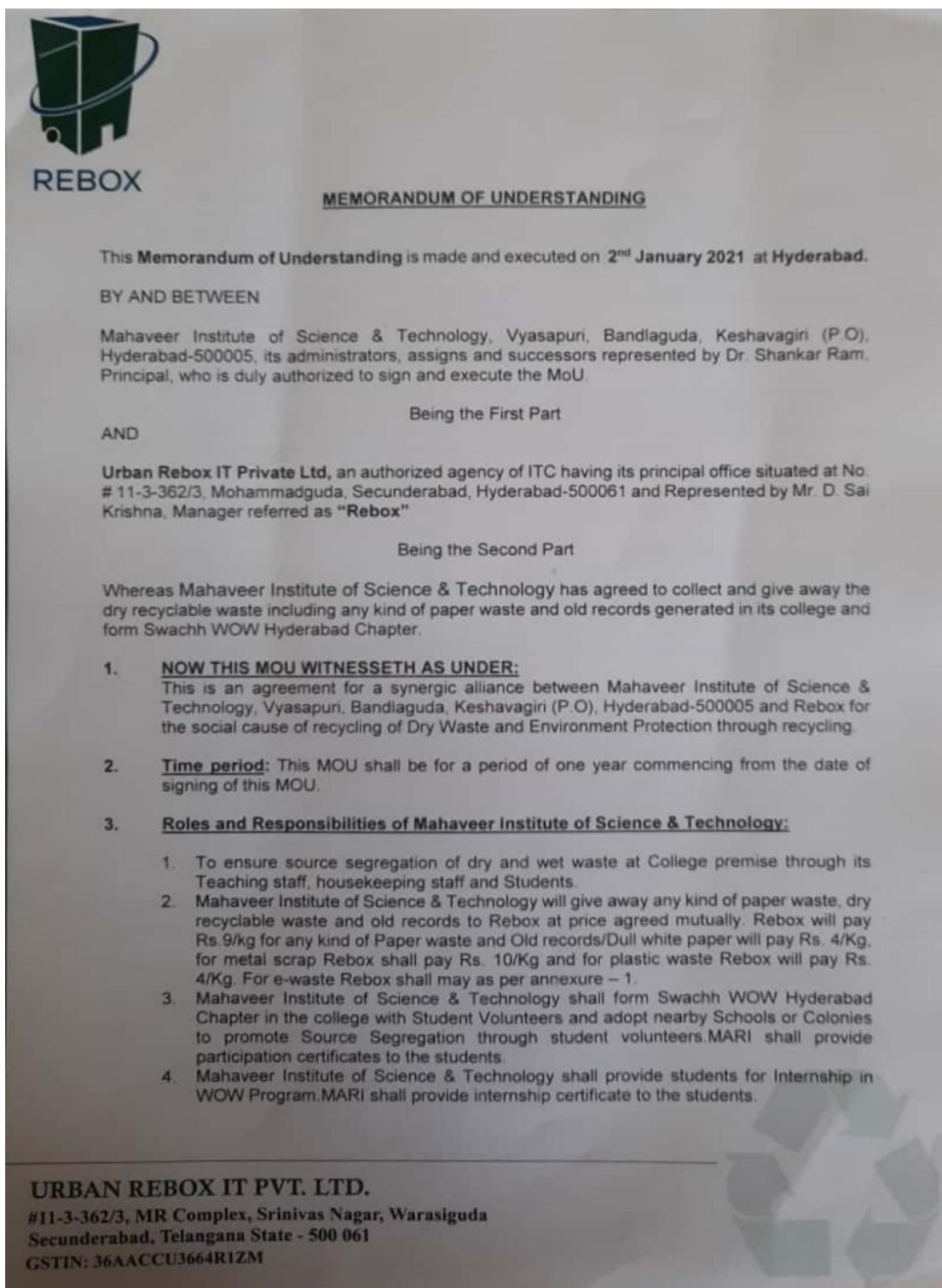
An agreement has been made with M/s Urban Rebox, Hyd for disposal of the E Waste which are mentioned below (A detailed MOU is enclosed)

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



MOU for E Waste Disposal



Scanned with CamScanner



Annexure 1

Below are the items and rates listed:

Sl.no	Description	Price (Rs/Piece)
1.	<u>E-waste:</u>	
	CRT Monitors	60.00
	LCD/LED Monitors (working condition)	280.00
	LCD/LED Monitors (Non-working condition)	80.00
	CPU (working condition)	300.00
	CPU (non-working condition)	160.00
	Keyboard	10.00
	Mouse	1.00
	Dot Matrix Printer	70.00
	Laser Jet/ Desktop Printer	150.00
	Core/Dual core Laptop (non-working condition)	450.00
	i Processor Laptop (non-working condition)	600.00
	Core/Dual core Laptop (working condition)	1000.00
	i Processor Laptop (working condition)	1700.00
	UPS	80.00
	Cables (per KG)	15.00
	SMPS	15.00
	Head Phones	10.00



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 GSTIN: 36AACCU3664R1ZM



Scanned with CamScanner



PCB Reg. No:72/TSPCB/E-WASTE/RRD/RO-RR-I/HO/2021,
Dated:24/02/2021, Valid till: 31/01/2026

Certificate No.	RS/COR/21/222
Date of Material Receiving	17/11/21

CERTIFICATE OF DESTRUCTION

This is to certify that **E-WASTE (AS PER ANNEXURE-1)** has been collected and dismantled from **MAHAVEER INSTITUTE OF SCIENCE & TECHNOLOGY HYDERABAD** as per E-waste management guidelines, 2016. .

ANNEXURE-1

SL NO	ITEMS	QNTY	UOM
1	CPU	20	PCS
2	CRT MONITOR	20	PCS
3	KEYBOARD	11	PCS
4	MOUSE	20	PCS

FOR REBOOT RESOURCES PVT LTD

A handwritten signature in blue ink, appearing to be 'Sri Gayatri', is written over a horizontal line.



AUTHORIZED SIGNATURE

Carbon Foot Print Calculation

The Mahavir Institute has total members – 1726 , Students – 1487 , staff -239 (Teaching – 180 + Non Teaching- 59) the Co2 emission is 6131 Kg/day

Members by Two Wheeler – 350 – Co2 emission is. 526.75 Kg /day

Members by College Bus – 569 - Co2 emission is 2586 Kg/day

Members by Public Transport – 787 - Co2 emission is 2782 Kg/day

Members by Car Pooling – 15– Co2 emission is 182.92 Kg/day

Members by Individual Car -5 – 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

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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)				

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A Green Initiative to reduce the CarbonFoot Print : Cycle is put to use within the campus are for commuting , also a battery car is provided



Agnisumukh – Fuel Efficiency Improvement











AGNISUMUKH

PRODUCT USP's

- Preserving nutrition in food
- Clean pot and pan
- Device is safer as it operates under low gas pressure
- Saving of water and detergent over 50%
- Saving of gas fuels over 30%
- Lower ambient heat in kitchen
- High thermal efficiency at 69% under IS: 14612
- No daily maintenance for cleaning the burner
- Heat can be given from top, down or any desired direction
- Increased productivity – user can do multi-tasking
- Faster, Healthier and tastier cooking
- Amenable for automated control

AGNISUMUKH

PRODUCT ADVANTAGE

			
OVER 40% GAS SAVING	HIGHEST THERMAL EFFICIENCY AT 69%	PRESERVES NUTRITION	NO EMISSION OF CARBON SOOT
			
LOW GAS PRESSURE MAKES IT SAFER	SAVES OVER 50% WATER & DETERGENT	NO MAINTENANCE FOR BURNER & EXHAUST	LOWER AMBIENT HEAT IN THE KITCHEN

Innovate Disrupt Transform

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RO PLANT