



**PowerTech Energy Solutions**  
Conserve to Consume

# Energy & Green Audit Report Of Sir Visvesvaraya Institute Of Technology, Nashik



Submitted By

**PowerTech Energy Solutions**

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## **ENERGY & GREEN AUDIT COMPLETION CERTIFICATE**

This is to certify that following utility has carried out Energy & Green Audit as per guidelines laid down in The Energy Conservation Act, 2001 in the month of December 2017

<b>Name of the Installation</b>	Pravara Education Societies Sir Visvesvaraya Institute Of Technology, Nashik
<b>Details of Facilities Audited</b>	Main college building including laboratories, libraries, etc.
<b>Date of Energy and Green Audit</b>	08 December 2017
<b>Name of Certified Energy Auditor</b>	Mr. Swapnil Gaikwad
<b>Certification No.</b>	EA 20121
<b>Validity of the Certificate</b>	08 December 2018



Signature of Auditor

(Swapnil Gaikwad)

## **Green Audit**

Green audit was initiated with the beginning of 1970s with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. It exposes the authenticity of the proclamations made by multinational companies, armies and national governments with the concern of health issues as the consequences of environmental pollution. It is the duty of organizations to carry out the Green Audits of their ongoing processes for various reasons such as; to make sure whether they are performing in accordance with relevant rules and regulations, to improve the procedures and ability of materials, to analyze the potential duties and to determine a way which can lower the cost and add to the revenue. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit. Some of the incidents like Bhopal Gas Tragedy (Bhopal; 1984), Chernobyl Catastrophe (Ukraine; 1986) and Exxon-Valdez Oil Spill (Alaska; 1989) have cautioned the industries that setting corporate strategies for environmental security elements have no meaning until they are implemented.

Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade a, Grade B or Grade C according to the scores assigned at the time of accreditation.

The intention of organizing Green Audit is to upgrade the environment condition in and around the institutes, colleges, companies and other organizations. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environmental friendly institute.

### **Goals of Green Audit**

- The objective of carrying out Green Audit is securing the environment and cut down the threats posed to human health.
- To make sure that rules and regulations are taken care of
- To avoid the interruptions in environment that are more difficult to handle and their correction requires high cost.
- To suggest the best protocols for adding to sustainable development

## **Benefits of Green Audit**

- It would help to shield the environment
- Recognize the cost saving methods through waste minimizing and managing
- Point out the prevailing and forthcoming complications
- Authenticate conformity with the implemented laws
- Empower the organizations to frame a better environmental performance
- It portrays a good image of a company which helps building better relationships with the group of stakeholders
- Enhance the alertness for environmental guidelines and duties

## **Initiatives by College towards Sustainable Environment**

### **Tree Plantation**

Tree-planting is the process of transplanting tree seedlings, generally for forestry, land reclamation, or landscaping purpose. It differs from the transplantation of larger trees in arboriculture, and from the lower cost but slower and less reliable distribution of tree seeds.

In silviculture the activity is known as reforestation, or afforestation, depending on whether the area being planted has or has not recently been forested. It involves planting seedlings over an area of land where the forest has been harvested or damaged by fire, disease or human activity. Tree planting is carried out in many different parts of the world, and strategies may differ widely across nations and regions and among individual reforestation companies. Tree planting is grounded in forest science, and if performed properly can result in the successful regeneration of a deforested area. Reforestation is the commercial logging industry's answer to the large-scale destruction of old growth forests, but a planted forest rarely replicates the biodiversity and complexity of a natural forest.

Because trees remove carbon dioxide from the air as they grow, tree planting can be used as agro engineering technique to remove CO<sub>2</sub> from the atmosphere. Desert greening projects are also motivated by improved biodiversity and reclamation of natural water systems, but also improved economy and social welfare due to increased number of jobs in farming and forestry.

College has planted the trees campus area to make it more environments friendly.

### (Academic Year: 2016-17)

Name of Activity organized	Tree Plantation
Title of the Activity	Tree Plantation
Date of Activity organized	01/7/2016
Name of the coordinator of Activity	Prof. R.D. Patil
Place of the Activity	SVIT, Campus
No. of Participant (Student+ Staff)	188
Name of the sponsored organization	Savitribai Phule Pune University
Nature of sponsorship (Total Grants Received if any)	21000
Objective of the Activity	To save environment , Reduce global warming
Outcome of the Activity	Improves Air quality ,reduces erosion and pollution

News published (if any)

Photo Gallery



Photo-1 Tree Plantation



Photo-2 Tree Plantation



Photo-3 Tree Plantation

## Activity Organized Report – Tree Plantation- 2017-18 (Academic Year: 2017-18)

<b>Name of Activity organized</b>	<b>Tree Plantation</b>
<b>Title of the Activity</b>	<b>Tree Plantation</b>
<b>Date of Activity organized</b>	<b>4/7/2017</b>
<b>Name of the coordinator of Activity</b>	<b>Prof. K.P. Tambe</b>
<b>Place of the Activity</b>	<b>SVIT, Campus</b>
<b>No. of Participant (Student+ Staff)</b>	<b>126</b>
<b>Name of the sponsored organization</b>	<b>Savitribai Phule Pune University</b>
<b>Nature of sponsorship (Total Grants Received if any)</b>	<b>Rs-21000/</b>
<b>Objective of the Activity</b>	<b>To save environment , Reduce global warming</b>
<b>Outcome of the Activity</b>	<b>Improves Air quality ,reduces erosion and pollution</b>
<b>News published (if any)</b>	
<b>Photo Gallery</b>	





Photo-1 Tree Plantation



Photo-2 Tree Plantation





Photo-3 Tree Plantation



Photo-4 Tree Plantation



## Use of Solar PV System for power Generation

SVIT has installed 100kW solar PV plant to generate the electricity through solar energy. Solar power plant is generating almost 18000 units annually which results in reduction of 15 Tons of CO<sub>2</sub> emission

Following are the some actual images of installed solar PV plant



## Scope for Improvement

### Liquid Waste Management

The proper disposal of liquid waste is a must in order to maintain a good human and animal health. Because liquid waste has a high amount of dangerous compounds such as salts and metals, it is important for companies to get rid of it in a timely manner. Industrial wastes, including dangerous and hazardous liquids, can be disposed of by using a wide variety of techniques and methods.

#### Present Condition

There is an improvement opportunity for college. Sewage treatment facility can be provided to re-use the waste water for applications other than drinking. It is recommended that to make standard operating procedure (SOP) for disposal of chemicals which has been used in laboratories for practical purpose

Following details are given for guidance to dispose the laboratory chemical waste

#### Solution

##### Disposal Procedures for Laboratory Chemicals

It is the clear responsibility of all research workers to ensure the safe and correct disposal of all wastes produced in the course of their work. Improper and irresponsible disposal of chemical wastes down drains, to the Local Authority refuse collection, or into the atmosphere is forbidden by law.

##### Wash down drains with excess water

- Concentrated and dilute acids and alkalis
- Harmless soluble inorganic salts (including all drying agents such as  $\text{CaCl}_2$ ,  $\text{MgSO}_4$ ,  $\text{Na}_2\text{SO}_4$ ,  $\text{P}_2\text{O}_5$ )
- Alcohols containing salts (e.g. from destroying sodium)
- Hypochlorite solutions from destroying cyanids, phosphines, etc.
- Fine (tlc grade) silica and alumina

It should be noted in particular that no material on the "Red List" should ever be washed down a drain. This list is as follows:

- compounds of the following elements:- antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, tellurium, thallium, tin, titanium, uranium, vanadium and zinc.
- organohalogen, organophosphorus or organonitrogen pesticides, triazine herbicides, any other biocides.
- cyanides
- mineral oils and hydrocarbons
- poisonous organosilicon compounds, metal phosphides and phosphorus element
- fluorides and nitrites

### **Incineration (Solvent Waste collection)**

- all organic solvents including water miscible ones
- soluble organic waste including most organic solids
- paraffin and mineral oil (from oil baths and pumps)

### **Laboratory waste bins and controlled waste**

All waste suitable for the Local Authority refuse collection, except recyclable paper and glass, is termed 'controlled waste'. Items in this category which includes dirty paper, plastic, rubber and wood, should generally be placed in the waste bins available in each laboratory and will be collected by the cleaners. However, each laboratory must also have a container for certain items which are not allowed to be put in the normal waste bins. In this special controlled waste container should be put:- all broken laboratory glassware, any sharp objects of metal or glass, all fine powders (preferably inside a bottle or jar) and dirty sample tubes or other items lightly contaminated with chemicals (but not any syringes or needles). Laboratory controlled waste containers must be emptied regularly and never allowed to overflow. Under no circumstances must any item of glass, sharp metal or fine powder ever be put in a normal laboratory waste bin. The tops must be removed from all bottles put out for disposal and there should be no detectable smell of chemicals from any bottle put for disposal.

### **For more information, please visit**

<https://www.standrews.ac.uk/staff/policy/healthandsafety/publications/waste/waste-disposaloflaboratorywastesguidance/>

## E Waste Management

Electronic waste or e-waste describes discarded electrical or electronic devices. Used electronics which are destined for reuse, resale, salvage, recycling, or disposal are also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environmental pollution.

Electronic scrap components, such as CPUs, contain potentially harmful components such as lead, cadmium, beryllium, or brominated flame retardants. Recycling and disposal of e-waste may involve significant risk to health of workers and communities in developed countries and great care must be taken to avoid unsafe exposure in recycling operations and leaking of materials such as heavy metals from landfills and incinerator ashes.

College need to have E-waste management policy and all the E-waste disposals generated in the college campus should be disposed/ reuse as per standard procedures/norms

### The environmental impact of the processing of different electronic waste components

E-Waste Component	Process Used	Potential Environmental Hazard
Cathode ray tubes (used in TVs, computer monitors, ATM, video cameras, and more)	Breaking and removal of yoke, then dumping	Lead, barium and other heavy metals leaching into the ground water and release of toxic phosphor
Printed circuit board (image behind table – a thin plate on which chips and other electronic components are placed)	De-soldering and removal of computer chips; open burning and acid baths to remove metals after chips are removed.	Air emissions and discharge into rivers of glass dust, tin, lead, brominated dioxin, beryllium cadmium, and mercury
Chips and other gold plated components	Chemical stripping using nitric and hydrochloric acid and burning of chips	PAHs, heavy metals, brominated flame retardants discharged directly into rivers acidifying fish and flora. Tin and lead contamination of surface and groundwater. Air emissions of brominated dioxins, heavy metals, and PAHs
Plastics from printers, keyboards, monitors, etc.	Shredding and low temp melting to be reused	Emissions of brominated dioxins, heavy metals, and hydrocarbons
Computer wires	Open burning and stripping to remove copper	PAHs released into air, water, and soil.

## **Rain Water Harvesting**

There is a good potential for rain water harvesting in a college. This water can be used for purposes like gardening, bores, wells, etc.

Feasibility study can be carried out to know the actual potential from rain water harvesting project

## **Plastic Free and Paper Free Campus**

Concept of plastic free and paper free campus can be successfully implemented in the college. Management need to take initiative to make the policy for same. It will help to do reduce the use of plastic and papers which will be a good contribution towards sustainable environment