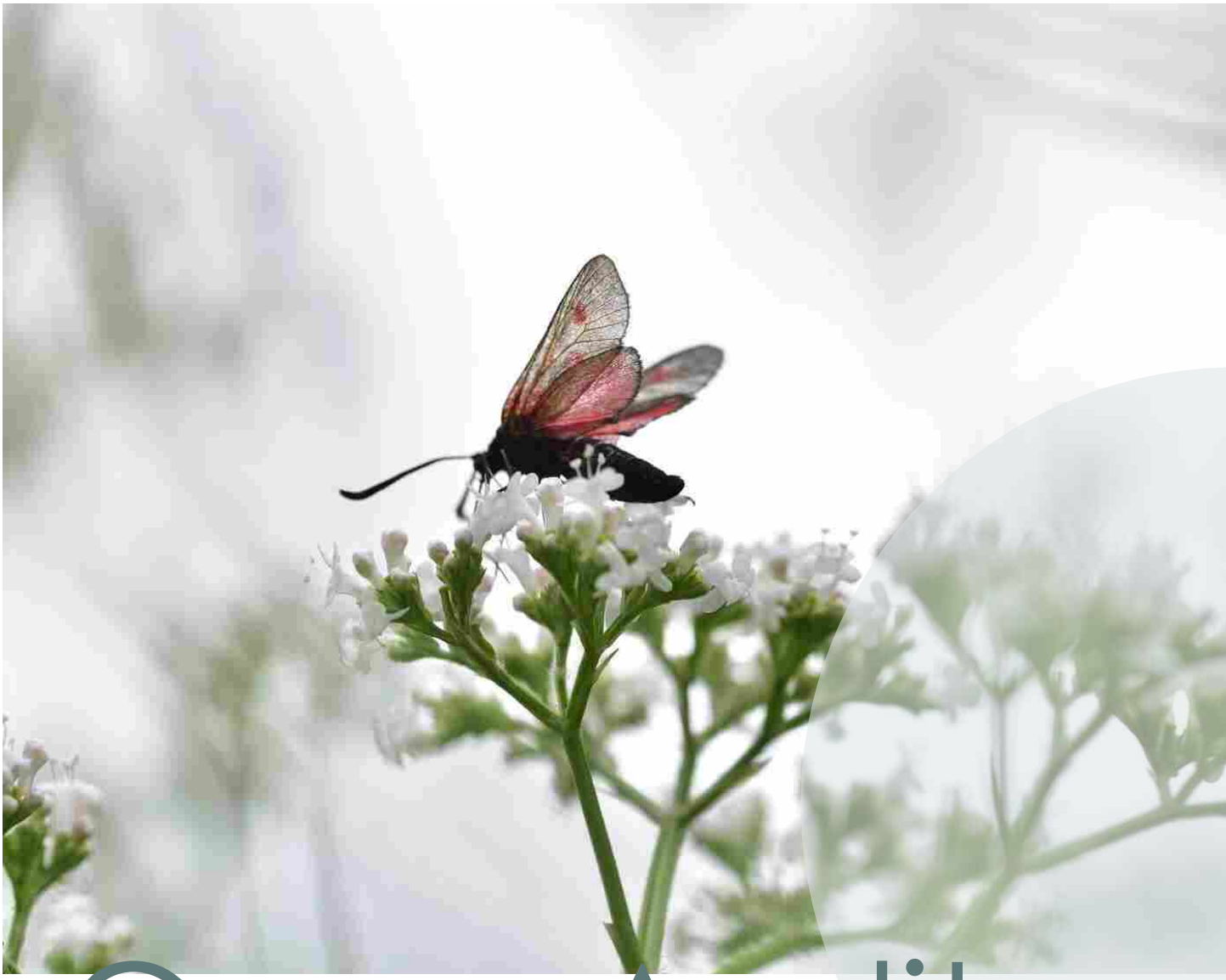


Green Audit
2022-23

ecoprotek

Principal
S.D. College, Hoshiarpur

ACKNOWLEDGEMENT

We offer our heartfelt thanks to Management and Staff of Sanatan Dharam College, Hoshiarpur, Punjab, for providing us the chance to support their energy conservation efforts. For their enthusiastic assistance in conducting measurements and willingness to determine the system/equipment efficiencies and saving possibilities, we are grateful to all officials and staff of Sanatan Dharam College, Hoshiarpur, Punjab, with whom we had contact during the field research. The willingness of these key personnel to participate in this program and acknowledge the call for energy efficiency is more than half the issues received.

New Delhi

10/08/2023

EXECUTIVE SUMMARY

Green auditing is the process of identifying and determining whether institutions' practices are eco-friendly and sustainable. The main objective to carry out a green audit is to check green practices followed by the college and to conduct a well-formulated audit report to understand where we stand on a scale of environmental soundness. The initiative taken by **Sanatan Dharam College, Hoshiarpur, Punjab** to conduct a **Green Audit** of the College campus is a commendable sustainable goal.

The strategies followed were the preparation of questionnaires and subsequent action plans to implement the project. Questionnaires prepared to conduct the green audit were based on the guidelines, rules, acts, and formats set by the Government of India, Ministry of Environment and Forest, New Delhi, and Central Pollution Control Board, New Delhi. Questionnaires were prepared for solid waste, energy, water, hazardous waste, and e-waste. For audit purposes, analysis of suitable data is required, for the same study area is grouped into various Blocks and Departments. The audit was carried out for solid waste, electricity and energy, water and wastewater, hazardous waste, air quality, and green inventory including carbon footprints. It also indicates the green initiatives taken by college to save environmental resources. The “Green Audit“ also presents the “Environmental Management Plan“.

Principal
S.D. College, Hoshiarpur

Introduction

GREEN AUDIT - AN EFFECTIVE EFFORTS TOWARDS ENVIRONMENT SUSTAINABILITY & ENERGY CONSERVATION

The two significant twentieth-century achievements that have increased the quality and comfort of human existence are modernization and industrialization. They are also accountable for the rapacious use of natural resources, the destruction of forests and wildlife, the vast production of solid waste, the contaminating of precious and limited water supplies, and ultimately the ugliness and hostile condition of our mother Earth. Global concerns like global warming, the greenhouse effect, ozone depletion, climate change, etc. are becoming more well known nowadays. Mother Earth is now said to be issuing a final invitation to follow the path of sustainable development. It is now necessary to become aware, get together, and fight for a sustainable environment.

Considering the present environmental problems of pollution and excessive use of natural resources, Honorable Prime Minister, Shri. Narendra Modi ji has declared the Mission of Swachh Bharat Abhiyan. Also, University Grants Commission has mentioned the "Green Campus, Clean Campus" mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Green Audit is the most efficient ecological tool to solve such environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process, the regular environmental activities are monitored within and outside of the concerned sites which have direct and indirect impacts on the surroundings. A green audit can be one of the initiatives for such institutes to account for their energy, water resource use as well as wastewater, solid waste, hazardous waste generation. The green Audit process can play an important role in the promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological and ethics. Through the green audit, one can get direction about how to improve the condition of the environment.

WHY GREEN AUDIT

Green auditing is the process of identifying and determining whether an institution's practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. However, over the period of time excess use of resources like energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than the required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean ones. The green audit provides an approach for it. It also increases overall consciousness among the people working in institutions towards an environment.

GOALS OF GREEN AUDIT

College has conducted a green audit with specific goals as:

- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identification and documentation of green practices followed by college
- Identify strengths and weaknesses in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solutions for problems identified from the survey.
- Identify and assess environmental risk.
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issues.
- To motivate staff for optimized sustainable use of available resources.

OBJECTIVES OF GREEN AUDIT

- To examine the current practices which can impact the environment such as resource utilization, waste management, etc.
- To prepare an Environmental Statement Report on green practices followed by different departments, support services, and administration building.
- To set goals, vision, and mission for green practices on the campus.
- To identify and analyze significant environmental issues.
- To establish and implement Environmental Management Plan in various departments.
- To assess for better performance in green practices and its valuation.

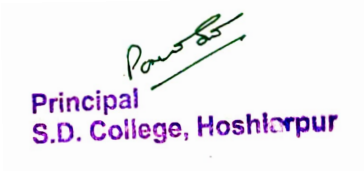
Principal
S.D. College, Hoshiarpur

ABOUT CRITERIA 7 OF NAAC

Higher education institutions like Sanatan Dharam College, Hoshiarpur, Punjab are playing a key role in the development of human resources worldwide. Higher education institutes campus run various activities with the aim to percolate the knowledge along with practical dimension among the society. Likewise, different technological solutions related to the environment are also provided by the higher education institutes. Different types of evolutionary methods are used to assess the problem concerning the environment. It includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green audit, etc.

National Assessment and Accreditation Council (NAAC) is a self-governing organization that rated the institutions according to the scores assigned at the time of accreditation of the institution. Green Audit has become a mandatory procedure for educational institutes under Criterion VII of NAAC. The intention of the green audits is to upgrade the environmental condition inside and around the institution. It is performed by considering environmental parameters like water and wastewater accounting, energy conservation, waste management, air, noise monitoring, etc. for making the institution eco-friendlier.

Students are the major strength of any academic institution. Practicing green action in any educational institution will inculcate the good habit of caring for natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Bird watching camps, no vehicle day, Rainwater harvesting, etc. will make the students good citizens of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.



BENEFITS OF GREEN AUDIT TO AN EDUCATIONAL INSTITUTE

There are many advantages of green audit to an Educational Institute.

- It would help to protect the environment in and around the campus.
- Recognize the cost-saving methods through waste minimization and energy conservation.
- Empower the organization to frame a better environmental performance.
- It portrays a good image of the institution through its clean and green campus.
- More efficient resource management
- To create a green campus
- To enable waste management through reduction of waste generation, solid and waste
- To create plastic-free campus and evolve health consciousness among the stakeholder
- Recognize the cost-saving methods through waste minimizing and managing
- Authenticate conformity with the implemented laws
- Empower the organizations to frame a better environmental performance
- Enhance the alertness for environmental guidelines and duties
- Impart environmental education through systematic environmental management approach and improving environmental standards
- Benchmarking for environmental protection initiatives
- Financial savings through a reduction in resource use
- Development of ownership, personal and social responsibility for the HEI and its environment
- Developing an environmental ethic and value systems in youngsters.

Introduction of Auditing Firm

M/s. Ecoprotek is an empaneled Accredited Energy Audit Firm from the Bureau of Energy Efficiency, Ministry of Power, Government of India. It is one of the fast-growing Energy Audit & Energy services providing company executed several projects covering all the energy Intensive Sectors & states of India. The directors and associate team members are very well experienced in the field of Energy Audit and executed more than 150 no's Detailed Energy Audit so far. The associate team and experts are highly qualified and experienced in the field of Energy Audit and Services. Individual credential of each member in the field of Energy Audit is very rich due to their past association with the very reputed organization of Energy Audit Services. The company has Head office at Delhi.

Name of Firm	Ecoprotek
Address	J-38, Saket, New Delhi
Contact details	9821202568 Email id: info@ecoprotek.org.in

Directors Details

Sr. No.	Name	Designation / Technical Experience	Technical Experience /Qualification
1	Mr. Aashish Sethi	Managing Director - 10yrs	B.E (E&I). , MBA(Energy Management), Certified Energy Auditor, Surveyor & Loss Assessor
2	Mr. Rakesh Alahawat	Director- 25Yrs	B.E (Elect.) Accredited Energy Auditor
3	Dr Shashi B Singh	Director- 25Yrs	B.E.(Mech), Government approved Valuer, Competent Person for Factory Act
4	Dr Dhanesh Shanti	Director- 10 Yrs	M.Tech, PhD (Environmental Biotechnology).
5	Dr Kanwar Dhaliwal	Director- 8 yrs	B.Pharm, M. Tech, PhD Certified Energy Auditor

Principal
S.D. College, Hoshiarpur

M/s. Ecoprotek Recognized as **"Startup"** from Department of Promotion of Industry and Internal Trade, Ministry of Commerce & Industry, Government of India and also Registered in Ministry of Micro, Small & Medium Enterprises **(MSME)** as Micro unit.

Energy audit team

The energy audit team involved in the energy audit of Sanatan Dharma College, Hoshiarpur are as follows:

SN	Name	Designation/ Qualification	Experience
1	Mr. Rakesh khichariya	Accredited Energy Auditor (AEA-0295)	25 yrs.
2	Mr. Aashish Bafna	Certified Energy Auditor (EA-28916)	10 yrs.
3	Mr. Sachet Chitransh	Consultant & B.Tech (Electronics & Comm.)	14 yrs.
4	Mr. Prashant Sonwani	Energy Engineer	3 yrs.

List of Instruments

Following are the instrument used at the time of the Energy Audit.

Sr. No.	Instrument	Make/Sr.No.
1	Power & Harmonics Analyzer, 1 Set (With CT, PT) HT	Krykard ALM 31/ 123673RCH
2	Power & Harmonics Analyzer, 1 Set (With CT, PT) HT	Krykard ALM 20/ 28107280
3	Temperature gun 1 Set (infrared Thermometer)	MECO 550 T/ IRT550T_17120136
4	Lux Meter 1Set (Digital Lux Meter)	MECO G 930P/201704004601
5	Flue gas Analyzer	KANE-905/ 54019395

Principal
S.D. College, Hoshiarpur

Methodology

A pre-audit meeting provided an opportunity to reinforce the scope and objectives of the audit and pre-audit discussions were held on the basis of green initiatives taken and the current scenario of the College campus. This meeting is an important prerequisite for the green audit because it is the first opportunity to understand the concerns. It was held with the concerned person of the college regarding initiatives taken by the college and regarding the last NAAC Green Audit conducted by the college. The meeting was an opportunity to gather the information that the audit team can study before arriving on the site. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself. The pre-audit meeting was conducted successfully and necessary documents were collected directly from the college before the initiation of the audit processes. The actual planning of audit processes was discussed in the pre-audit meeting. An Audit team was also selected in this meeting with the help of staff and the College management. The audit protocol and audit plan were handed over at this meeting and discussed in advance of the audit itself.

Management Commitment

The Management of the college has shown a commitment towards green auditing during the pre-audit meeting. They were ready to encourage all green activities. It was decided to promote all activities that are environmentally friendly such as awareness programs on the environment, campus farming, planting more trees on the campus, etc., after the green auditing. The management of the college was willing to formulate policies based on a green auditing report.

Objectives of the study

A clean and healthy environment aids effective learning and provides a conducive learning environment. There are various efforts around the world to address environmental education issues. Green Audit is the most efficient and ecological way to manage environmental problems. It is a kind of professional care that is them responsibility of each individual who is part of economic, financial, social, environmental factors. It is necessary to conduct a green audit on a college campus because students become aware of the green audit, its advantages to saving the planet and they become social and responsible citizens of our country. Thus Green audit becomes necessary at the college level. The broad objectives are as follows.

Principal
S.D. College, Hoshiarpur

- Diagnosing the environmental problems to eliminate them.
- Environmental education through a systematic environmental management approach.
- Improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Efficient utilization of resources.
- Financial savings through a reduction in resource use.
- Curriculum enrichment through practical experience.
- Development of ownership, personal and social responsibility for the College and its environment.
- Developing environmental ethics and value systems in young people.
- Providing certain recommendations based on environmental audit reports.
- Ensuring compliance, not only with laws, regulations, and standards but also with company policies and the requirements of an Environmental Management System (EMS) standard.
- Enabling environmental problems and risks to be anticipated.
- To demonstrate that college is aware of its impact upon the environment.

Audit Stage

Green Audit was done with the help of co-associates involving different student groups, teaching, and non-teaching staff. The green audit began with the teams walking through all the different facilities at the College, determining the different types of appliances and utilities as well as measuring the usage per item (Watts indicated on the appliance or measuring water from a tap) and identifying the relevant consumption patterns (such as how often an appliance is used) and their impacts. The staff and learners were interviewed to get details of usage, frequency, or general characteristics of certain appliances. Data collection was done in the sectors such as Energy, Waste, Green Area, Carbon footprint, and Water use. College records and documents were verified several times to clarify the data received through surveys and discussions.

Principal
S.D. College, Hoshiarpur

Methodology

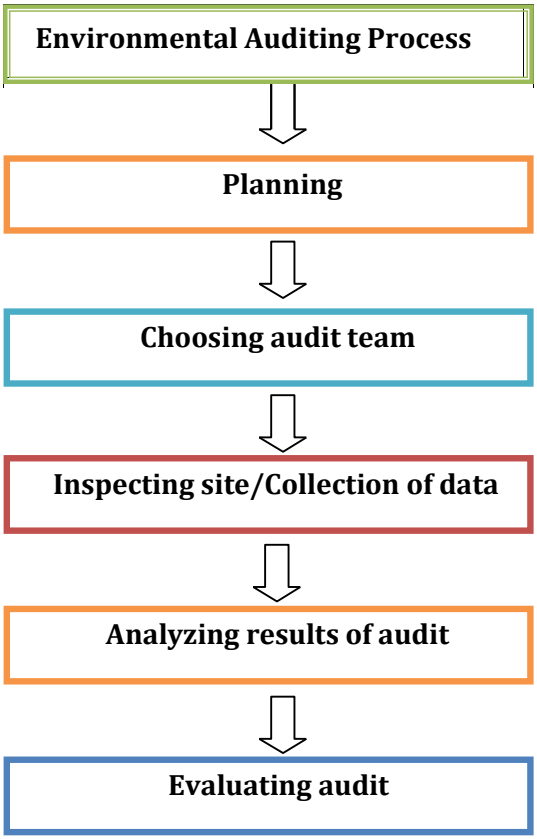
The Management of the College has shown a commitment towards green auditing during the pre-audit meeting. They were ready to encourage all green activities. It was decided to promote all activities that are environmentally friendly such as awareness programs on the environment, campus farming, planting more trees on the campus, etc., after the green auditing. The management of the College was willing to formulate policies based on a green auditing report. In order to perform green audits, the methodology included different tools such as preparation of questionnaires, physical inspection of the campus, observation, and review of the documentation, interviewing key persons, and data analysis, measurements, and recommendations. The study covered the following areas to summarize the present status of environmental management on the campus:

- Energy Management
- Water Management
- Waste Management
- Environment Management

Methodology – Step by Step

The audit process was carried out in three phases. At first, all the secondary data required for the study was collected from various sources, like concerned departments such as engineering cell, horticulture section, etc. A broad reference work was carried out to clear the idea of green auditing. Different case studies and methodologies were studied and the following methodology was adopted for the present audit. The methodology of the present study is based on onsite visits, personal observations, and questionnaires survey tools. Initially, based on data requirements, sets of questionnaires were prepared. The surveyors then visited all the departments of the College and the questionnaires were filled. The generated data is subsequently gathered and used for further analysis. From the outcome of the overall study, a final report is prepared.

Principal
S.D. College, Hoshiarpur



Survey by Questionnaire

Baseline data for green audit report preparation was collected by questionnaire survey method. Questionnaires are prepared to conduct the green audit in the College campus based on the guidelines, rules, acts, and formats prepared by the Ministry of Environment, Forest and Climate Change, New Delhi, Central Pollution Control Board, and other statutory organizations. Most of the guidelines and formats are based on broad aspects and some of the issues or formats were not applicable for the College campus. Therefore, using these guidelines and formats, combinations, modifications, and restructuring were done and sets of questionnaires were prepared for solid waste, energy, water, hazardous waste, and e-waste data.

All the questionnaires are a group of modules. The first module is related to the general information of the concerned department, which broadly includes the name of the department, month and year, the total number of students and employees, visitors of the department, average working days and office timings, etc. The next module is related to the present consumption of resources like water, energy, or the handling of solid and

Principal
S.D. College, Hoshiarpur

azardous waste. Maintaining records of the handling of solid and hazardous waste is much important in green audits. There are possibilities of loss of resources like water, energy due to improper maintenance, and assessment of this kind of probability is necessary for the green audit. One separate module is based on the questions related to this aspect. Another module is related to maintaining records, like records of disposal of solid waste, records of solid waste recovery, etc. For better convenience of the surveyor, some statistics like basic energy consumption characteristics for electrical equipment, etc. were provided with the questionnaires.

Onsite visit and observations

SD college has a vast built-up area comprising various departments under various academic buildings, teachers and staff quarters, many facilities including Academic Buildings, Guest House, Health Centre, Council hall, Auditorium, other facilities and separate men's and women's hostels. All these amenities have different kinds of infrastructure as per their requirement. All these buildings were visited by the surveyors and the present condition is checked with the help of the questionnaires. Personal observations were made during the onsite visit. All the amenities were clubbed in, as per their similarities and differences, which makes the survey and further analysis easier. For the data compilation purpose, the College Departments and support services were clubbed into Three Types of Buildings and given names as academic buildings, Facilities Buildings, and Hostel Buildings. The details of the Buildings are as follows:

Sr. No.	Name of the Buildings
1.	Academic Buildings
2.	Facilities Buildings

After the collection of secondary data, the reviews related to each environmental factor were taken by the green audit team. The data were tabulated, analyzed and graphs were prepared. Depending upon the observations and data collected, interpretations were made. The lacunas and good practices were documented. The Environmental Management Plan (EMP) was prepared for the next academic year in order to have better environmental sensitization. Finally, all the information was compiled in the form of the Green Audit Report.

Principal
S.D. College, Hoshiarpur

Data analysis and final report preparation

Proper analysis and presentation of data produced from work is a vital element. In the case of a green audit, the filled questionnaires of the survey from each group were tabulated as per their modules, in Excel spreadsheets. The tabulated data is then used for further analysis. For a better understanding of the results and to avoid complications, averages, and percentages of the tables were calculated. A graphical representation of these results was made to give a quick idea of the status. Interpretation of the overall outcomes was made which incorporates all the primary and secondary data, references, and interrelations within. Final report preparation was done using this interpretation.

WATER & WASTE WATER AUDIT

Water is a precious natural national resource available with a fixed quantum. The availability of water is decreasing due to the increasing population of the nation; as per capita availability of utilized water is going down. Due to the ever-rising standard of living of people, industrialization, urbanization, demand for freshwater is increasing day by day. The unabated discharge of industrial effluent in the available water bodies is reducing the quality of these ample sources of water continuously. Hence, the national mission on water conservation was declared by the Honorable Prime Minister Narendra Modi as 'Jal Shakti Abhiyan' and appealed to all citizens to collectively address the problem of water shortage, by conserving every drop of water and suggesting conducting water audits for all sectors of water use. Water audit can be defined as a qualitative and quantitative analysis of water consumption to identify means of reducing, reusing, and recycling water. Water Audit is nothing but an effective measure for minimizing losses, optimizing various uses, and thus enabling considerable conservation of water in the irrigation sector, domestic, power, and industrial sectors. A water audit is a technique or method which makes it possible to identify ways of conserving water by determining any inefficiency in the system of water distribution. The measurement of water losses due to different uses in the system or any utility is essential to implement water conservation measures in such an establishment.

Importance of Water Audit

- Systematic process
- May yield some surprising results
- Easier to work on solutions when the problems are identified.
- Attracting mechanism can be put into place.

It is observed that a number of factors like climate, culture, food habits, work and working conditions, level and type of development, and physiology determine the requirement of water. The community which has a population between 20,000 to 1, 00,000 requires 100 to 150 liters per person (capita) per day. The communities with a population over 1, 00,000 require 150 to 200 liters per person (capita) per day. As per the standards provided by WHO Regional Office for Southeast Asia Schools require 2 liters of water per Student.

Principal
S.D. College, Hoshiarpur

Water Audit

Water usage can be defined as water used for all activities which are carried out on campus from different water sources. This includes usage in all residential halls, academic buildings, on-campus, and on-grounds. Wastewater is referred to as the water which is transported off the campus. The wastewater includes sewerage, residence water used in cooking, showering, clothes washing as well as wastewater from chemical and biological laboratories which ultimately go down in the sink or drainage system.

College water resources

The major resource for the water in the College is a self-reliant water boring system installed on the campus.

Total consumption of the campus is approx. 1800 Litres per day by operating discharge pumps with a total discharge capacity of 15 Kilo Litres for 8 hours per day. Out of this, 1000 Litres water is used to cover the total daily consumption in the College Campus including Drinking, Bathroom, Toilet, Garden, Urinals, Wash Basin, Laboratory etc. in the total population of 800 (Including office staff, strength and residential buildings) of the College campus. Hence total approx. 1.25 litres per day per head is used for Bathroom, Toilet, Garden, Urinals, Shower, Drinking, and Laboratories etc.

Principal
S.D. College, Hoshiarpur

Yearly Average Water Consumption at S D College

The Figure shows the total percentage of water consumed by all the Building Blocks of S D College, Hoshiarpur. The figure shows that toilets, washbasins, and bathrooms as the major sources of water utilization comprising 27.40 %, 23.04 %, and 19.68 % respectively. The other uses namely garden, urinals, laboratory, and shower consume water with yearly water requirements of 8.73 %, 6.71%, 6.38 %, and 5.15 % respectively. Further also includes water required for drinking purposes, and loss of water during filling and during discharge which is 2.84 %, 0.05 %, and 0.02 %. It was observed that the water required for drinking purposes is 2.84%. In the case of filling loss of water was observed 0.05 % and during discharging water, the loss is about 0.02% only.

Principal
S.D. College, Hoshiarpur

Waste Water Filtration Tank

The college has a huge campus with its administrative setup and there is a lot of waste water collected from laboratories and other open areas which are disposed of in the tank. college has constructed a Mini Water Filtration Tank on the campus. This filter house is used to filter the wastewater regularly. This water is utilized for further trees and plants in the campus as self-filtered water throughout the year.

Rain Water Harvesting Units

The underground water table is decreasing day by day & minute by minute. The reason is that no attempt is made to replenish the groundwater table with rainwater during the monsoon & other rainy days. Rainwater harvesting is the simple collection or storing of water through scientific techniques from the areas where the rain falls. It involves the utilization of rainwater for domestic or agricultural purposes. The method of rainwater harvesting has been in practice since ancient times. It is as far the best possible way to conserve water and awaken society towards the importance of water. The method is simple and cost-effective too. It is especially beneficial in the areas, which face a scarcity of water. We can see that the People usually make complaints about the lack of water. During the monsoons, lots of water goes waste into the gutters. And this is when Rain Water Harvesting proves to be the most effective way to conserve water. We can collect the rainwater into the tanks and prevent it from flowing into drains and being wasted. It is practiced on a large scale in metropolitan cities. Rainwater harvesting comprises the storage of water and water recharging through the technical process. Currently, five numbers of rainwater harvesting exist on the campus further the college is planning to extend and install several units under rainwater harvesting mission including rooftop RWH installation at different buildings for the coming year which will be spread into the mass-scale which covers several units. These units will be utilized for further storing and reusing of natural water.

Principal
S.D. College, Hoshiarpur

ENERGY AUDIT

Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also, it can be said as "the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs producing the output from these systems". The energy audit is key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use and serves to identify all the energy streams in a facility.

Energy audit

Energy resources utilized by all the departments, support services, and the administrative buildings of SD College, Hoshiarpur, include Electricity, Solar Roof Top Systems, and Diesel Generators installed on the campus.

Energy Audit Objectives

Primary

- The first objective is to acquire and analyze data and find the necessary consumption pattern of these facilities.
- The second objective will be to calculate the wastage pattern based on the results of the first objective.
- The final objective is to find and implement solutions that are acceptable and feasible.

Principal
S.D. College, Hoshiarpur

Secondary

This would be our first exposure to this field hence experience gain would be vital.

This project will precede many follow up projects and hence helps to gain technical and management exposure required for future energy projects.

It is sure to help create a repertoire of vital contacts hence will develop interac tion with alumni, faculty and students.

Source of Energy

Sanatan Dharma College Hoshiarpur withdraws Energy from Followings:

- Electricity from PSPCL
- Solar Energy

The Following are the Major consumers of Electricity in the facility

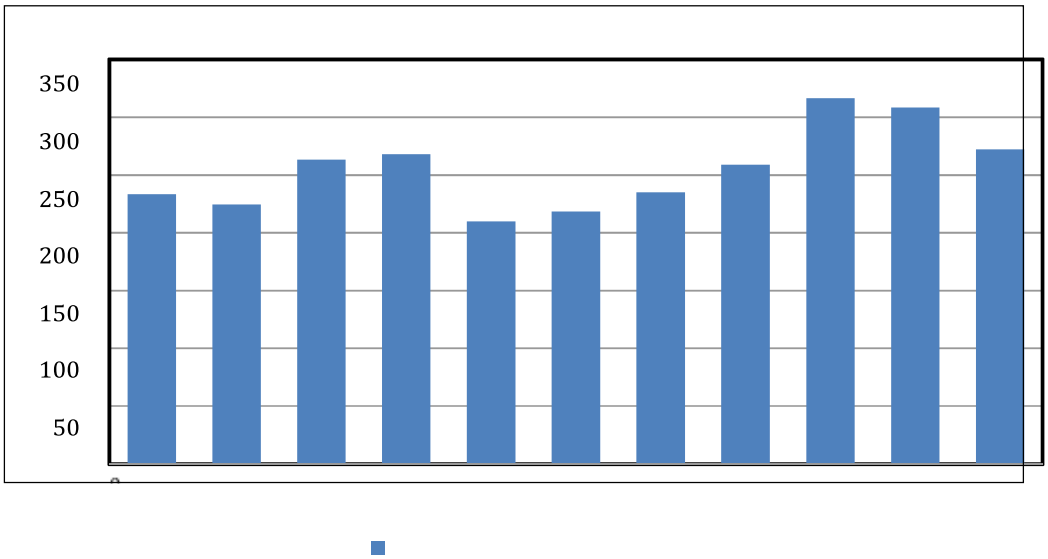
- Lightning
- Air Conditioner
- Fans
- Computers
- Other Lab Equipment

Indirect Benefits of Energy Audit

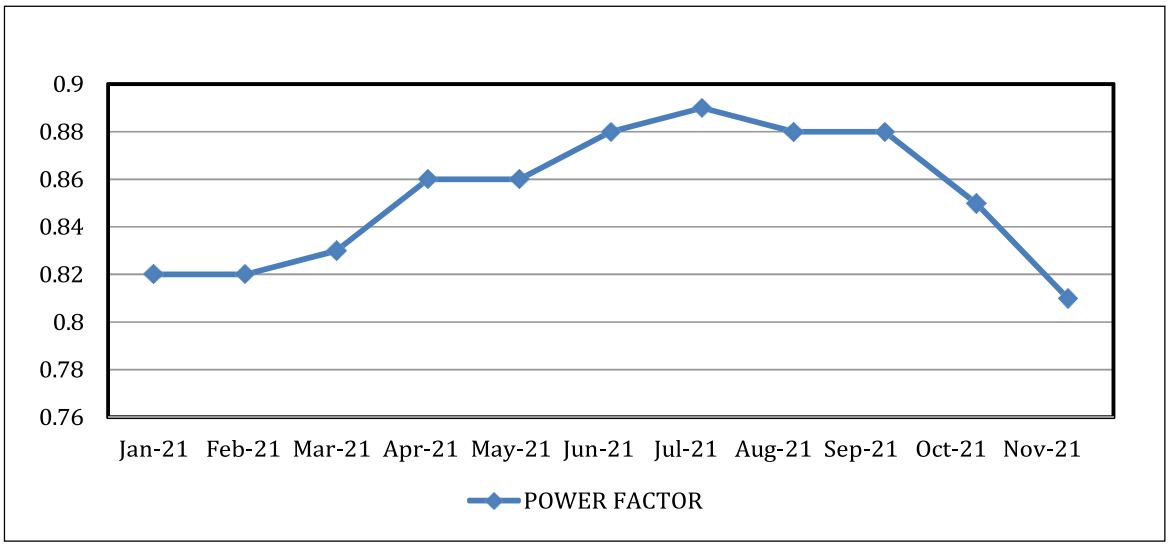
Every time the Energy Audit is carried out it rekindles the interest in Energy Conservation as an important function. Energy Auditors sharing their experience and knowledge with the Plant Personnel helps in fueling the innovative ideas for further action of reduction in Specific Power consumption (SPC). Any loose connections or heating of cables come to timely vision. For an external agency due to unbiased vision, a few points for Energy Conservation may be visible each time they perform the audit and this would help in achieving further saving. Inform any irregularities in Energy meter HT connections for rectification.

Principal
S.D. College, Hoshiarpur

Graphical Representation of Consumption Unit (kWh)



Graphical Representation of Power Factor

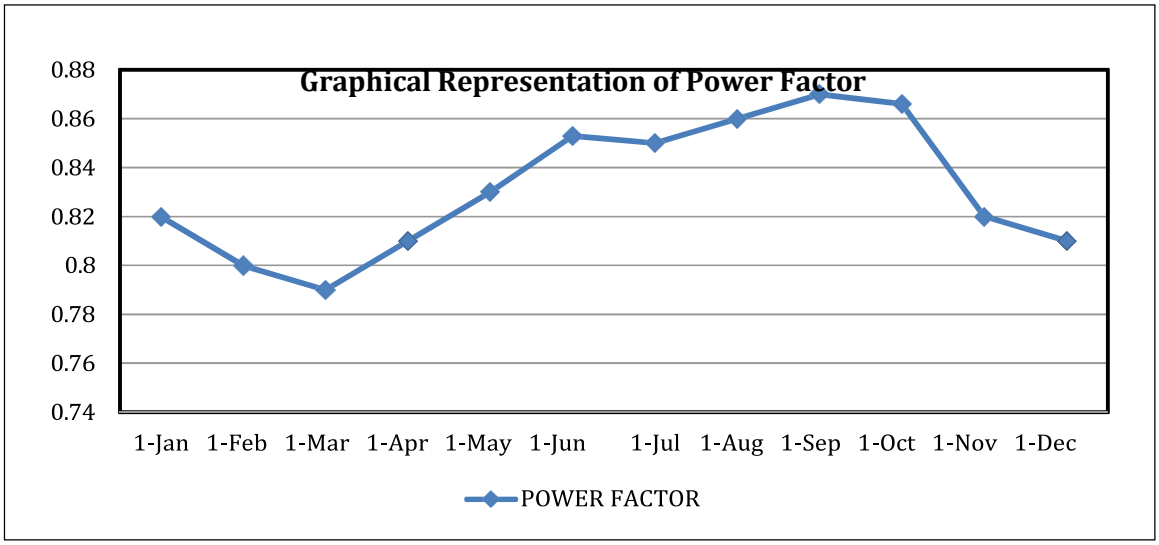


Observation

The average Power factor recorded in the last year of 2021 is 0.85 which is satisfactory.

It is recommended to install an Automatic Power Factor Correction machine (APFC) on the premises to maintain the Power factor.

Principal
S.D. College, Hoshiarpur



Observation

The average Power factor recorded in the year 2020 is 0.83 which is not satisfactory. It is recommended to install an Automatic Power Factor Correction instrument (APFC) in the premises to maintain the Power factor.

Principal
S.D. College, Hoshiarpur

Lighting system

Lighting is an essential service in all industries, Universities, Hospitals, Malls, etc. Innovation and continuous improvement in the field of lighting, have given rise to tremendous energy-saving opportunities in this area. Lighting is an area, which provides a major scope to achieve energy efficiency at the design stage, by incorporation of modern energy-efficient lamps, luminaries, and gears, apart from good operational practices.

Basic Terms in Lighting System and Features

Lamps

Lamp is equipment, which produces light. The most commonly used lamps are described briefly as follows:

Incandescent lamps

Incandescent lamps produce light by means of a filament heated to incandescence by the flow of electric current through it. The principal parts of an incandescent lamp, also known as GLS (General Lighting Service) lamp include the filament, the bulb, the fill gas and the cap.

Reflector lamps

Reflector lamps are basically incandescent, provided with a high quality internal mirror, which follows exactly the parabolic shape of the lamp. The reflector is resistant to corrosion, thus making the lamp maintenance free and output efficient.

Gas discharge lamps

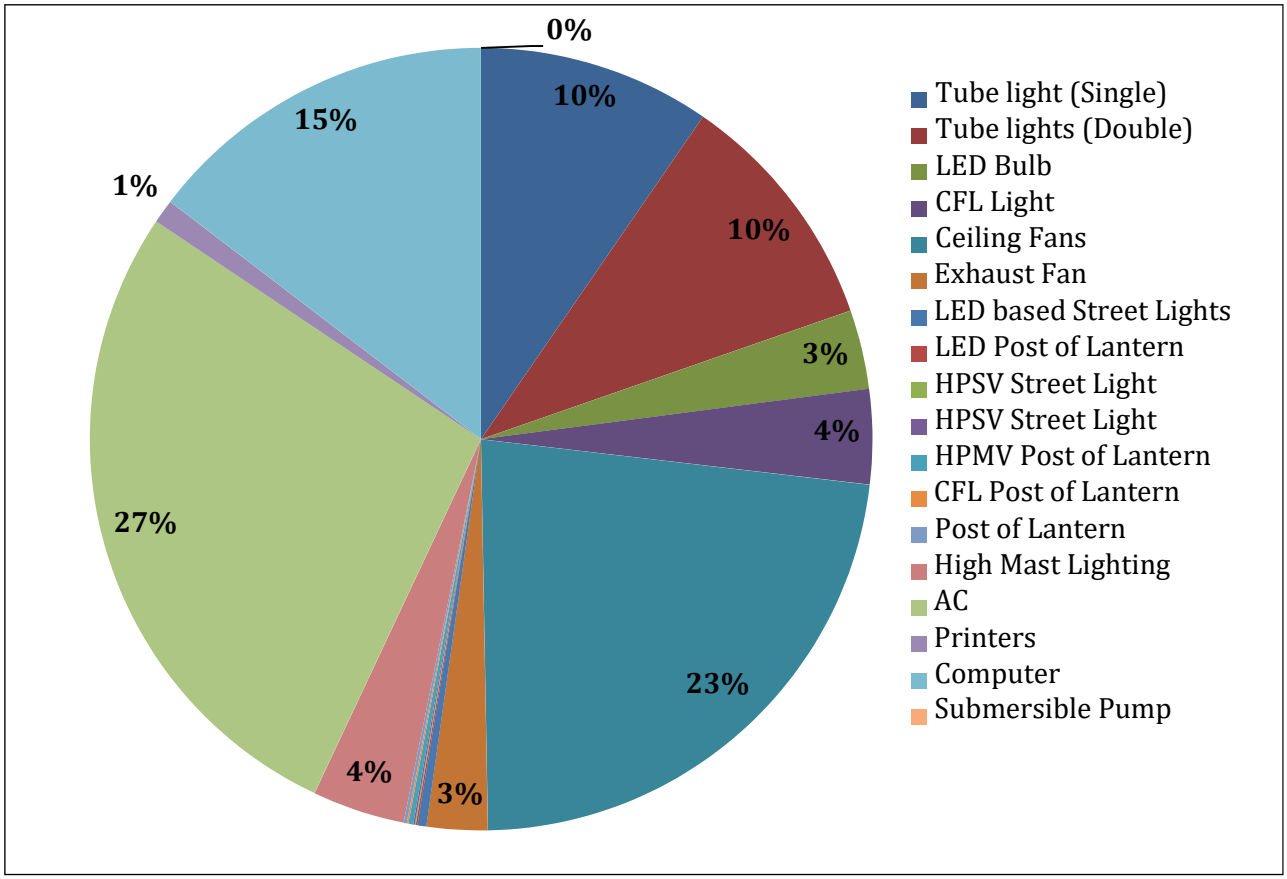
The light from a gas discharge lamp is produced by the excitation of gas contained in either a tubular or elliptical outer bulb. The most commonly used discharge lamps are as follows:

- Fluorescent tube lamps (FTL)
- Compact Fluorescent Lamps (CFL)
- Mercury Vapour Lamps
- Sodium Vapour Lamps
- Metal Halide Lamps

Inventory Details

The audit team has done the Inventory with Wattage analysis of the different types of lighting installed and the other electrical equipment across the campus.

Representation of Percentage Wattage Consumption



Observation

It is observed that the consumption of old conventional light (Tube light & HPSV light) is very high. It is recommended to replace old inefficient conventional light with energy- efficient .

Principal
S.D. College, Hoshiarpur

Power Quality

Power Quality & Harmonics

- Maximum Individual Frequency Voltage Harmonic: 3%
- Total Harmonic Distortion of the Voltage: 5%

harmonic current limitations

Maximum Harmonic Current Distortion in Percent of IL
120 Volt through 69 KV
Individual Harmonic Order (Odd Harmonics)

ISC/IL	h<11	11<h<17	17<h<23	23<h<35	35<h	TDD
<20*	4.0	2.0	1.5	0.6	0.3	5.0
20<50	7.0	3.5	2.5	1.0	0.5	8.0
50<100	10.0	4.5	4.0	1.5	0.7	12.0
100<1000	12.0	5.5	5.0	2.0	1.0	15.0
>1000	15.0	7.0	6.0	2.5	1.4	20.0

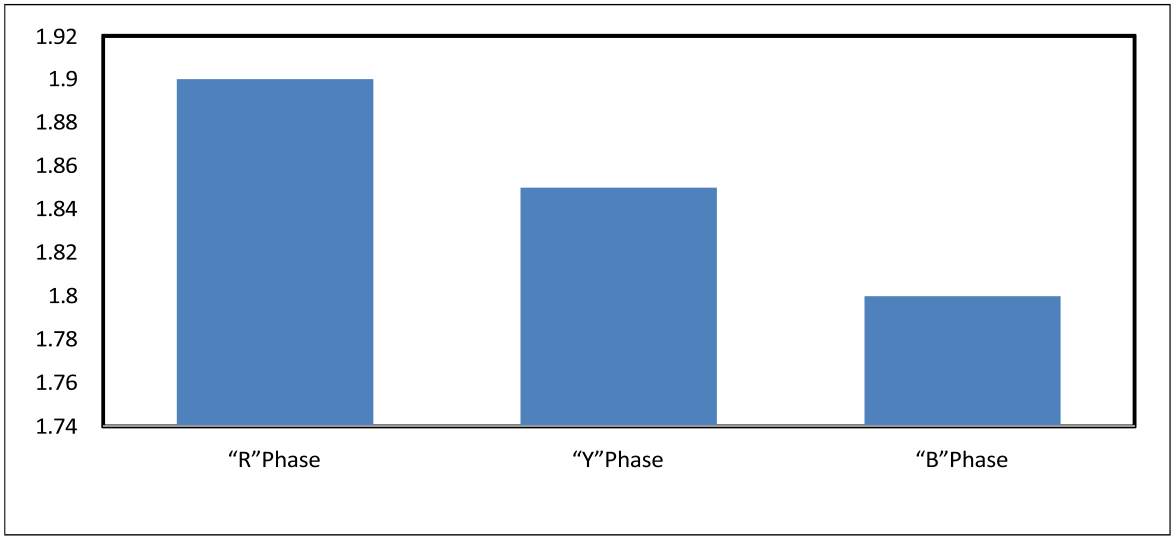
Even harmonics are limited to 25% of the odd harmonic limits
TDD refers to Total Demand Distortion based on the average demand current at the fundamental frequency and measured at the PCC (Point of Common Coupling).
*All power generation equipment is limited to these values of current distortion regardless of ISC/ IL value.
ISC = Maximum short-circuit current at PCC.
IL = Maximum demand load current (fundamental) at the PCC.
h = Harmonic number.

Equipment based on frequency conversion techniques generates harmonics. With the increased use of such equipment, harmonics-related problems have been enhanced. The harmonic currents generated by different types of loads travel back to the source. While traveling back to the source, they generate harmonic voltages, following simple Ohm's Law. Harmonic voltages, which appear on the system bus, are harmful to other equipment connected to the same bus. In general, sensitive electronic equipment connected to this bus will be affected. The Harmonics Level on the HT side of the Transformers was measured, details of which is as under: -

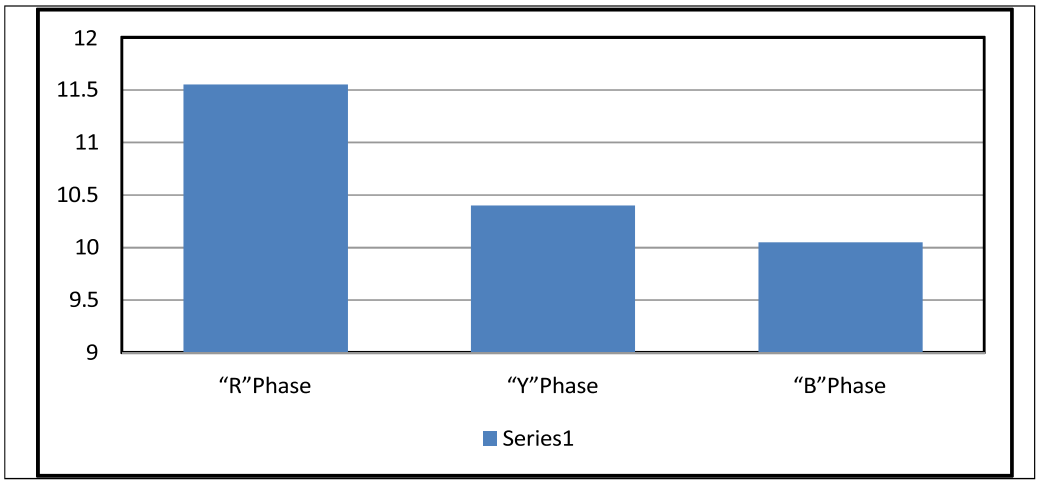
Particulars	TR
Voltage Harmonics(VTHD)	
"R"Phase	1.9
"Y"Phase	1.85
"B"Phase	1.8
Current Harmonics(ATHD)	
"R"Phase	11.55
"Y"Phase	10.4
"B"Phase	10.05

Principal
S.D. College, Hoshiarpur

Graphical Representation of Voltage Harmonics (V THD) of Main Incomer



Graphical Representation of Voltage Harmonics (V THD) of Main Incomer



OBSERVATIONS & SUGGESTIONS

As detailed above, the voltage harmonics levels were around 1.8-1.9% and the levels of the current harmonics were 10.4-11.55%. **The Overall harmonics are within limits.** If the Harmonics level is on the higher side, then appropriate harmonic filters may have to be installed in the system. Different technologies are available mitigating the harmonics from the system. These include **Detuned or broadband harmonic filters**: these filter banks are tuned to a frequency just below the predominant harmonic frequency. If the

Principal
S.D. College, Hoshiarpur

predominant harmonic frequency is say, 5th, it is normal practice to tune the filters to 189 Hz, or 3.78th harmonic, in 50 Hz systems.

Active Harmonic Filters: these units are designed in such a manner that, they will inject harmonic frequencies in the system, which will be in anti-phase of the load harmonic frequencies. This will effectively free the source being loaded due to harmonics.

MAJOR CAUSES OF HARMONICS

Devices that draw non-sinusoidal currents when a sinusoidal voltage is applied create harmonics. Frequently these are devices that convert AC to DC. Some of these devices are listed below:

- Electronic Switching Power Converters
- Computers, Uninterruptible power supplies (UPS), Solid-state rectifiers
- Electronic process control equipment, PLC's, etc.
- Electronic lighting ballasts, including light dimmer
- Reduced voltage motor controllers
- Arcing Devices
- Discharge lighting, e.g. Fluorescent, Sodium and Mercury vapor
- Transformers operating near saturation level
- Magnetic ballasts (Saturated Iron core)
- Induction heating equipment, Chokes, Motors, Appliances
- TV sets, air conditioners, washing machines, microwave ovens
- Fax machines, photocopiers, printers
- These devices use power electronics like SCRs, diodes, and thyristors, which are a growing percentage of the load in industrial power systems.

Many problems can arise from harmonic currents in a power system. Some problems are easy to detect; others exist and persist because harmonics are not suspected. Higher RMS current and voltage in the system are caused by harmonic currents, which can result in any of the problems listed below:

Blinking of Incandescent Lights	Transformer Saturation
Capacitor Failure	Harmonic Resonance
Circuit Breakers Tripping	Inductive Heating and Overload
Conductor Failure	Inductive Heating
Electronic Equipment Shutting down	Voltage Distortion
Flickering of Fluorescent Lights	Transformer Saturation
Fuses Blowing for No Apparent Reason	Inductive Heating and Overload
Motor Failures (overheating)	Voltage Drop
Electromagnetic Load Failures	Inductive Heating
Overheating of Metal Enclosures	Inductive Heating
Power Interference on Voice Communication	Harmonic Noise
Transformer Failures	Inductive Heating

General Tips for Energy Conservation in Different Utilities Systems

ELECTRICITY

- Schedule your operations to maintain a high load factor
- Minimize maximum demand by tripping loads through a demand controller
- Use standby electric generation equipment for on-peak high load periods.
- Correct power factor to at least 0.99 under rated load conditions.
- Set transformer taps to optimum settings.
- Shut off unnecessary computers, printers, and copiers at night.

Motors

- Properly size to the load for optimum efficiency.
- (High efficiency motors offer of 4 - 5% higher efficiency than standard motors)
- Check alignment.
- Provide proper ventilation, (For every 10°C increase in motor operating temperature over recommended peak, the motor life is estimated to be halved)
- Check for under-voltage and over-voltage conditions.
- Balance the three-phase power supply.

Principal
S.D. College, Hoshiarpur

- (An Imbalanced voltage can reduce 3 - 5% in motor input power)
- Demand efficiency restoration after motor rewinding.

FANS

- Use smooth, well-rounded air inlet cones for fan air intakes.
- Avoid poor flow distribution at the fan inlet.
- Minimize fan inlet and outlet obstructions.
- Clean screens, filters, and fan blades regularly
- Use aero foil-shaped fan blades.
- Minimize fan speed.
- Use low-slip or flat belts.
- Check belt tension regularly.
- Eliminate variable pitch pulleys.
- Use variable speed drives for large variable fan loads.
- Use energy-efficient motors for continuous or near-continuous operation
- Eliminate leaks in ductwork.
- Minimize bends in ductwork
- Turn fans off when not needed

PUMPS

- Operate pumping near best efficiency point.
- Modify pumping to minimize throttling.
- Adapt to wide load variation with variable speed drives or sequenced control of smaller units.
- Stop running both pumps -- add an auto-start for an on-line spare or add a booster pump in the problem area.
- Use booster pumps for small loads requiring higher pressures.
- Increase fluid temperature differentials to reduce pumping rates.
- Repair seals and packing to minimize water waste.
- Balance the system to minimize flows and reduce pump power requirements.
- Use siphon effect to advantage: don't waste pumping head with a free-fall (gravity) return.

Principal
S.D. College, Hoshiarpur

LIGHTING

- Reduce excessive illumination levels to standard levels using switching, delamping, etc. (Know the electrical effects before doing delamping.)
- Aggressively control lighting with clock timers, delay timers, photocells, and/or occupancy sensors.
- Install efficient alternatives to incandescent lighting, mercury vapor lighting, etc.
- Efficiency (lumens/watt) of various technologies range from best to worst approximately as follows: low pressure sodium, high pressure sodium, metal halide, fluorescent, mercury vapor, incandescent.
- Select ballasts and lamps carefully with high power factor and long-term efficiency in mind.
- Upgrade obsolete fluorescent systems to Compact fluorescents and electronic ballasts
- Consider lowering the fixtures to enable using less of them.
- Consider day lighting, skylights, etc.
- Consider painting the walls a lighter color and using less lighting fixtures or lower wattages.
- Use task lighting and reduce background illumination.
- Re-evaluate exterior lighting strategy, type, and control. Control it aggressively.
- Change exit signs from incandescent to LED.

DG SETS

- Optimize loading
- Use waste heat to generate steam/hot water /power an absorption chiller or preheat process or utility feeds.
- Use jacket and head cooling water for process needs
- Clean air filters regularly
- Insulate exhaust pipes to reduce DG set room temperatures.

WATER & WASTE WATER

- Recycle water, particularly for uses with less-critical quality requirements.
- Recycle water, especially if sewer costs are based on water consumption.
- Balance closed systems to minimize flows and reduce pump power requirements.

Principal
S.D. College, Hoshiarpur

- Eliminate once-through cooling with water.
- Use the least expensive type of water that will satisfy the requirement.
- Fix water leaks.
- Test for underground water leaks. (It's easy to do over a holiday shutdown.)
- Check water overflow pipes for proper operating level.
- Automate blowdown to minimize it.
- Provide proper tools for wash down -- especially self- closing nozzles.
- Reduce flows at water sampling stations.
- Eliminate continuous overflow at water tanks.
- Promptly repair leaking toilets and faucets.
- Use water restrictors on faucets, showers, etc.
- Use self-closing type faucets in restrooms.

ENERGY MANAGEMENT STRATEGY

Energy Management should be seen as a continuous process. Strategies should be reviewed annually and revised as necessary. The key activities suggested have been outlined below:

IDENTIFY A STRATEGIC CORPORATE APPROACH

The starting point in energy management is to identify a strategic corporate approach to energy management. Clear accountability for energy usage needs to be established, appropriate financial and staffing resources must be allocated and reporting procedures initiated. An energy management program requires commitment from the whole organization in order to be successful. A record of Energy consumption must be kept and monitored on regular basis, to optimize the Energy consumption. For this, various meters may have to be installed.

DESIGNATE AN ENERGY MANAGER

An Energy Manager must be identified and time bound responsibility must be given to him in getting implemented the findings of the Energy Audit points, which the Plant Establishment has planned to implement.

Principal
S.D. College, Hoshiarpur

SET UP AN ENERGY MONITORING AND REPORTING SYSTEM

Successful energy management requires the establishment of a system to collect/ analyze and report the energy costs and consumption pattern. This will enable an overview of energy use and its related costs, as well as facilitating the identification of savings that might `otherwise not be detected. The system needs to record both historical and ongoing energy use, as well as cost information from billing data, and capable of producing summary reports on a regular basis. This information will provide the means by which trends can be analyzed and reviewed for corrective measures.

IMPLEMENT A STAFF AWARENESS AND TRAINING PROGRAM

A key ingredient to the success of an energy management program is maintaining a high level of awareness among staff. This can be achieved in a number of ways, including formal training, newsletters, posters and publications. It is important to communicate program plans and case studies that demonstrate savings, and to report results at least at 12-month intervals. Staff may need training from specialists on energy saving practices and equipment.

CONCLUSIONS

Green Audit is one of the important tools to check the balance of natural resources and their judicial use. Green auditing is the process of identifying and determining whether institutional practices are eco-friendly and sustainable. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. The main objective to carry out a green audit is to check the green practices followed by the college and to conduct a well-defined audit report to understand whether the college is on the track of sustainable development. After completing the audit procedure of the college for green practices, there are the following conclusions, recommendations, and Environmental Management Plan(EMP) which can be followed by the college in the future for keeping campus environment friendly.

- college takes efforts to dispose of majority of waste by proper methods. Green computing i.e. Online payment systems, online circulars, and examination procedures are helpful for reducing the use of papers and ultimately reducing carbon footprint.
- Reducing the use of one-time use plastic bottles, cups, folders, pens, bouquets, decorative items will be useful to solve the problem of plastic pollution to some extent.
- Biodegradable waste is used efficiently for composting and vermicomposting.
- Use of LED lamps and Tube Lights is to be encouraged.
- Toilets and bathrooms are consuming more water in the departments. The replacement of old taps can be beneficial for solving this issue
- The use of electric cars on the campus is a good initiative to save fuel.
- The overall ambient air quality on the campus is good while some air quality issues that may arise due to developmental activities on the campus should be addressed. The sound levels on the campus are good.
- Science departments are following the principles of Green Chemistry to reduce chemical waste.

Principal
S.D. College, Hoshiarpur

Key Recommendations & Environment Management Plan (EMP)

Following are some of the key recommendations for improving the campus environment and to be considered as Environment Management Plan (EMP).

- An environmental policy document has to be prepared with all the recommendations and current practices carried by the college.
- A frequent visit should be conducted to ensure that the generated waste is measured, monitored, and recorded regularly and information should be made available to the administration.
- The college should develop internal procedures to ensure its compliance with environmental legislation and responsibility should be fixed to carry out it in practice.
- The solid waste should be reused or recycled at maximum possible places.
- Installation of sensor -based electrification items like fans, lights, etc. can save electricity
- Installation of solar panels and rainwater harvesting system to every terrace of the building will be useful in conserving the natural resources.
- Regular checkups and maintenance of pipes, overhead tanks, and plumbing systems should be done by the engineering section to reduce overflow, leakages, and corrosions.
- Science laboratories use large amount of water goes waste during the process of making distilled water; system should be developed to reuse this water for other purposes. The solar distillation unit to be installed at the earliest.
- No such processes or activities were observed at SD College which can deteriorate the environmental quality.
- The said college is in continuous efforts to spread the environmental awareness programs among staff and students.
- It was also observed that the said college is keeping the environmental quality at priority in every developmental stage.

Principal
S.D. College, Hoshiarpur

Green Audit Report

2021-22

ecoprotek consultants
ecoprotek
New Delhi

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय
श्री सनातन धर्म कालेज होशियारपुर पं.

Sanatan Dharma College

Hoshiarpur

A Premier Multi-Faculty, Post-Graduate, Co-Educational Institute

Affiliated to Panjab University, Chandigarh.

About us :

Established in 1973, with vision for holistic education for students from district Hoshiarpur and beyond. In 48 years of service to community, College has produced numerous Visionaries, Officials, Reputable Citizens who are serving Nation and Abroad in their own ways with Gratitude and Honesty.

Our college has grown into an Institution of repute for our Multi-Faculties offering UG/PG programs in Commerce, Arts, Computer Sciences, Management, Fashion, Vocational Sciences, Sciences & Biotechnology.

Vision

Sanatan Dharma College Hoshiarpur is an offspring of sublimes ideals of its founders which in sanskrit read

Tamso Ma Jyotirgamaya

Lead us God, from Darkness to Light

The College aims to spread the light of the Knowledge for the development of a healthy society by offering empowerment through Quality Education coupled with Social & Moral awareness

Mission

- To provide high quality education in fields of **Arts, Commerce, Computers, Management, Sciences and Biotechnology**.
- To facilitate the multifaceted development of students from all sections of the society.
- To produce Dynamic and Competent Youth through development of right skills.
- To produce Leaders, Visionaries, Talents able to nourish societies of Future.
- To inculcate respect for our culture among our society through the development of Social and Moral Consciousness.

Objectives

- Constantly strive to excel in Academics with use of Innovative Teaching and Learning Methods.
- To Mould Students into Responsible Citizens by sensitizing them of Social Concerns and Environmental Issues.
- To promote values of service, duty, tolerance, diligence and compassion in all facets of life, based on teachings of Sanatan Dharma.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

INTRODUCTION:

The modernization and industrialization are the two important outputs of twentieth century which has made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife,producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment.

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyse environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO_2 from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

OBJECTIVES:

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

1. To map the Geographical Location of the college
2. To document the floral and faunal diversity of the college
3. To record the meteorological parameter of Hoshiarpur where college is situated
4. To document the ambient environmental condition of weather, air, water and noise of the college
5. To document the waste disposal system
6. To estimate the Energy requirements of the college
7. To report the expenditure on green initiatives during the last five years

METHODOLOGY:

The purpose of the green audit of SD College, Hoshiarpur is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country. The methodology includes:

1. collection of data
2. physical inspection of the campus
3. observation
4. review of the documentation and data analysis.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultant's ecoprotek New Delhi

Geolocation and Land Use pattern:

S D College, Hoshiarpur is located in Hoshiarpur district located in Bist Doab, Doaba Region the north-east part of the Punjab State. The district is sub mountainous and stretches of river Beas in the north-west. It lies between north latitude 30 degree-9 and 32 degree-05 and east longitude 75° -32 and 76° -12'. It shares common boundaries with Kangra and Una districts of Himachal Pradesh in the north east, Jalandhar and Kapurthala districts (interspersed) in south-west and Gurdaspur district in the north-west.

Aerial View of College Campus:

Total Built up area of College Campus: **4002.34454** Sq. Mtrs.

Total Area of College Campus: **17,401.498** Sq Mtrs

Percentage of Built Up area to Total area of Campus : **23%** (approximately)

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultants
ecoprotek
New Delhi

Biodiversity (Flora and Fauna of Campus):

Green Cover of S D College, Hoshiarpur has positively improved the quality of life, not only for the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favourite of birds and many insects. Leaf covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. They also remind us the glorious history of our institution in particular. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see everyday.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय
श्री सनातन धर्म कालेज हाशियार पुर

ecotrotek consultant's
Ecotrotek
New Delhi

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

1) Mangifera indica- MANGO tree
2) Aegle marmelos- bael tree
3) Azadirachta indica- Neem tree
4) Ficus benghalensis-Banyan tree
5) Ficus religiosa- Sacred fig
6) Terminalia chebula- Chebulic Myrobalan/ Harad
7) Terminalia bellirica- Baheda
8) Phyllanthus emblica- Indian gooseberry
9) Delonix regia- Gulmohar tree
10) Pterospermum acerifolium- Kanak Champa
11) Tecoma stans- Yellow elder/ KANAK CHAMPA
12) YELLOW Cascabela thevetia- Kaner
13) RED Cascabela thevetia- Kaner
14) Royal Poinciana tree- Gulmohar
15) Thuja occidentalis- morpankh
16) Linum usitatissimum- alsi tomia
17) Elaeocarpus ganitrus- rudraksha, or rudraksh
18) Arecaceae- WATER PALM
19) Dypsis lutescens- Areca palm
20) Hyophorbe lagenicaulis- bottle palm
21) Saraca asoca- Ashoka tree
22) Tabernaemontana divaricate- Crepe jasmine
23) Tabernaemontana divaricate- High brand

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultants
ecoprotek
New Delhi

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

24) Bougainvillea glabra- White Bougainvillea

25) Bougainvillea glabra- Red Bougainvillea

26) Rosa persica- Red rose

27) Rosa foetida- Yellow rose

28) Rosa blanca- White rose

29) Jasminum grandiflorum- Chambeli

30) Combretum indicum- Madhumalti.

31) Ocimum tenuiflorum- Shama tulsi

32) Ocimum Sanctum- Rama tulsi

33) Rosa bourboniana- Pink rose

34) Calendula officinalis- Marigold

35) Rosa— Magenta rose

36) Zoysia japonica- Korean lawngrass

37) Portulaca grandiflora- eleven o'clock

38) Ficus elastic- Rubber fig

39) Populus- Cottonwood

40) Brachychiton rupestris- narrow-leaved bottle tree

41) Terminalia arjuna- Arjun tree

42) Melia azedarach- Dek (Dharek)

43) Eucalyptus globulus- Safeda tree

44) Saraca asoca- ashokan vatika

45) Mimusops elengi- Molsari

Principal
S.D. College, Hoshiarpur

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

46) Epipremnum aureum- Devil's ivy

47) Monstera deliciosa- Swiss cheese plant

48) Cassia fistula- Golden shower tree/ Amaltas

49) Grevillea robusta- Southern silky oak

50) Cassia fistula- golden shower

51) Hibiscus rosa-sinensis- Shoeblackplant/ hibiscus

52) Kalanchoe Pinnata- Patharchattam

53) Morus nigra- Black Mulberry

54) Duranta erecta- golden dewdrop/ pigeon berry

55) Daphne mezereum- fragrant daphne

56) Zinnia elegans- Common zinnia

57) Senegalia catechu- khair

58) Asparagus officinalis- asparagus

59) Codiaeum variegatum- croton plant

60) Acacia nilotica- Babul

61) Hibiscus rosa- gudhal plant

62) Celosia cristata- Cockscomb

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

WASTE DISPOSAL

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduce or eliminates the adverse impact on the environment and human health. A number of processes are involved in efficiently managing waste for a organisation. It is necessary to manage the solid waste properly to reduce the load on waste management system.

Solid waste generation and its management is a burning issue in current days. The rate of generation of solid waste is very high and yet we do not have adequate technology to manage the generated waste. Unscientific handling of solid waste can create threats to public health and environmental safety issues. Thus, it is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out the quantity, volume, type and current management practice of solid waste generation in the S D College Campus.

Results:

Category of waste	Paper waste	Plastic waste	Biodegradable waste	Construction waste	Glass waste	Other waste	Total waste kg/month	Total waste kg/year
Quantity	484.34	129.33	1983.15	291.4	31.16	189.38	**3108.77**	**37305.24**
percentage	15.58	04.16	63.79	09.37	1.00	6.09	100	

Organic Solid Waste Disposal Facility (Vermicomposting Pit):

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

New Delhi

ENERGY AUDIT

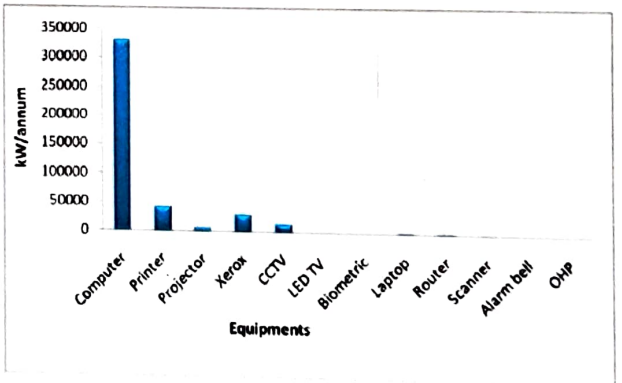
Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also it can be said as "the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems". The energy audit is key to a systematic approach for decision making in the area of energy management. It attempt to balance the total energy inputs with its use, and serve to identify all the energy streams in a facility.

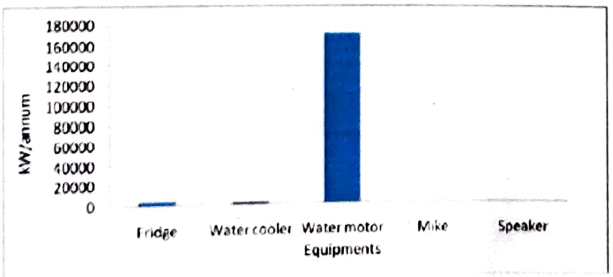
Energy resources utilized by all the departments, support services and the administrative buildings of S D College, Hoshiarpur campus include electricity and liquid petroleum Gas. Major use of the energy is at office, canteen, Classrooms and laboratories, for lighting, Instruction to students, cooking and workshop instruments.

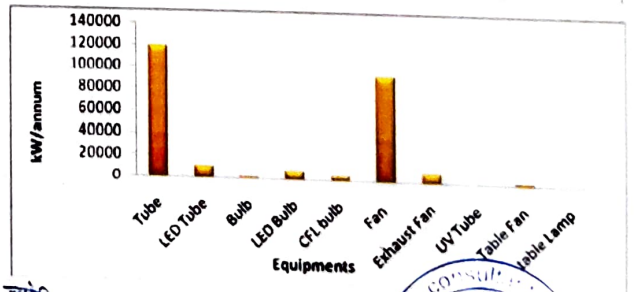
S D College, Hoshiarpur has installed solar power plant having a installed capacity of 11 kW. Electricity is also supplied to the college campus by Punjab State Power Corporation Limited, Mohali, Pb.

Energy Consumption Charts:

(based on annual Consumption)







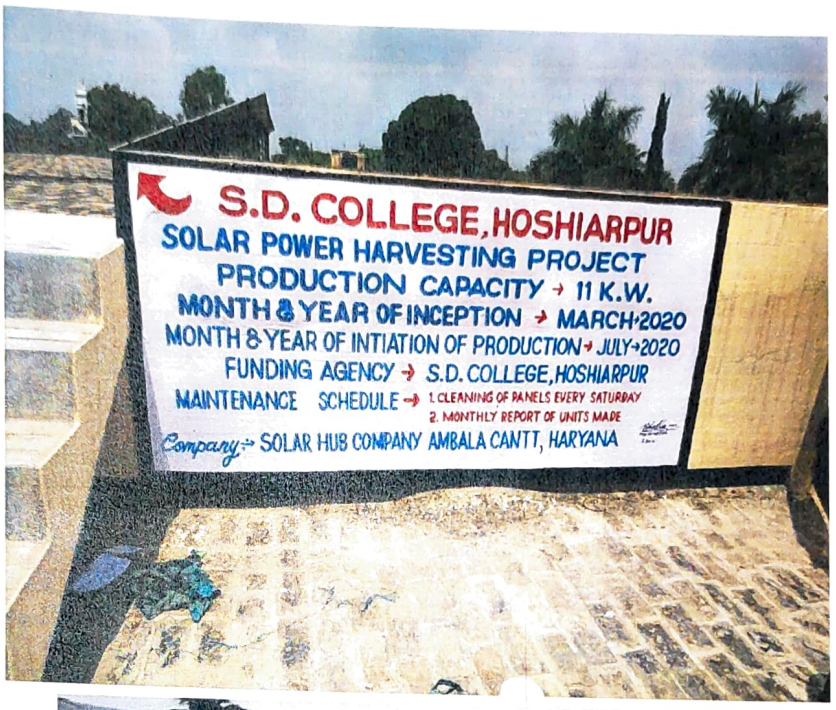
Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

New Delhi

ENERGY AUDIT

Solar power plant installed in SD College, Hoshiarpur



Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर

New Delhi

GREEN INITIATIVES by S D College, Hoshiarpur.

Tree plantation drive by College authorities:

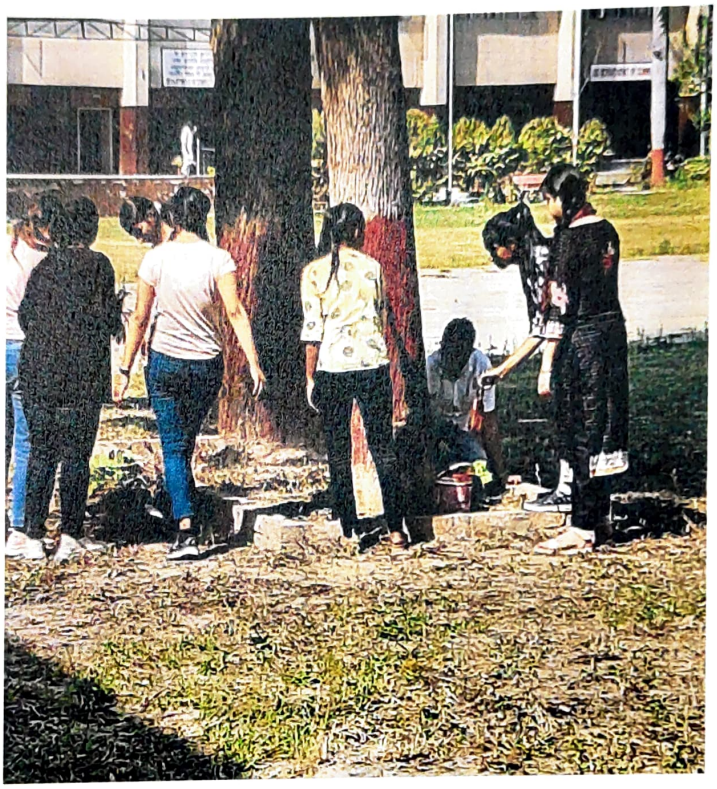
Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultant's

GREEN INITIATIVES by S D College, Hoshiarpur.

Plantation management and Swatchta drive by College authorities:



Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर पंः

ecoprotek consultants
ecoprotek
New Delhi

Flora and Fauna of S D College, Hoshiarpur.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालज होशियार पुर

Flora and Fauna of S D College, Hoshiarpur.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

GREEN INITIATIVES by S D College, Hoshiarpur.

Plantation drives by College authorities:

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय
श्री सनातन धर्म कालेज होशियारपुर

protek consultants
protek
New Delhi

Green Audit Report

2020-21

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियार पुर

Sanatan Dharma College

Hoshiarpur

A Premier Multi-Faculty, Post-Graduate, Co-Educational Institute

Affiliated to Panjab University, Chandigarh.

About us :

Established in 1973, with vision for holistic education for students from district Hoshiarpur and beyond. In 48 years of service to community, College has produced numerous Visionaries, Officials, Reputable Citizens who are serving Nation and Abroad in their own ways with Gratitude and Honesty.

Our college has grown into an Institution of repute for our Multi-Faculties offering UG/PG programs in Commerce, Arts, Computer Sciences, Management, Fashion, Vocational Sciences, Sciences & Biotechnology.

Vision

Sanatan Dharma College Hoshiarpur is an offspring of sublimes ideals of its founders which in sanskrit read

Tamso Ma Jyotirgamaya

Lead us God, from Darkness to Light

The College aims to spread the light of the Knowledge for the development of a healthy society by offering empowerment through Quality Education coupled with Social & Moral awareness

Mission

- To provide high quality education in fields of **Arts, Commerce, Computers, Management, Sciences and Biotechnology**.
- To facilitate the multifaceted development of students from all sections of the society.
- To produce Dynamic and Competent Youth through development of right skills.
- To produce Leaders, Visionaries, Talents able to nourish societies of Future.
- To inculcate respect for our culture among our society through the development of Social and Moral Consciousness.

Objectives

- Constantly strive to excel in Academics with use of Innovative Teaching and Learning Methods.
- To Mould Students into Responsible Citizens by sensitizing them of Social Concerns and Environmental Issues.
- To promote values of service, duty, tolerance, diligence and compassion in all facets of life, based on teachings of Sanatan Dharma.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

INTRODUCTION:

The modernization and industrialization are the two important outputs of twentieth century which has made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife,producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment.

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyse environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO_2 from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultancy

OBJECTIVES:

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

1. To map the Geographical Location of the college
2. To document the floral and faunal diversity of the college
3. To record the meteorological parameter of Hoshiarpur where college is situated
4. To document the ambient environmental condition of weather, air, water and noise of the college
5. To document the waste disposal system
6. To estimate the Energy requirements of the college
7. To report the expenditure on green initiatives during the last five years

METHODOLOGY:

The purpose of the green audit of SD College, Hoshiarpur is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country. The methodology includes:

1. collection of data
2. physical inspection of the campus
3. observation
4. review of the documentation and data analysis.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultants
ecoprotek
New Delhi

Geolocation and Land Use pattern:

S D College, Hoshiarpur is located in Hoshiarpur district located in Bist Doab, Doaba Region the north-east part of the Punjab State. The district is sub mountainous and stretches of river Beas in the north-west. It lies between north latitude 30 degree-9 and 32 degree-05 and east longitude 75" -32 and 76" -12'. It shares common boundaries with Kangra and Una districts of Himachal Pradesh in the north east, Jalandhar and Kapurthala districts (interspersed) in south-west and Gurdaspur district in the north-west.

Aerial View of College Campus:

Total Built up area of College Campus: **4002.34454** Sq. Mtrs.

Total Area of College Campus: **17,401.498** Sq Mtrs

Percentage of Built Up area to Total area of Campus : **23%** (approximately)

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

Biodiversity (Flora and Fauna of Campus):

Green Cover of S D College, Hoshiarpur has positively improved the quality of life, not only for the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favourite of birds and many insects. Leaf covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. They also remind us the glorious history of our institution in particular. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see everyday.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

1) Mangifera indica- MANGO tree
2) Aegle marmelos- bael tree
3) Azadirachta indica- Neem tree
4) Ficus benghalensis-Banyan tree
5) Ficus religiosa- Sacred fig
6) Terminalia chebula- Chebulic Myrobalan/ Harad
7) Terminalia bellirica- Baheda
8) Phyllanthus emblica- Indian gooseberry
9) Delonix regia- Gulmohar tree
10) Pterospermum acerifolium- Kanak Champa
11) Tecoma stans- Yellow elder/ KANAK CHAMPA
12) YELLOW Cascabela thevetia- Kaner
13) RED Cascabela thevetia- Kaner
14) Royal Poinciana tree- Gulmohar
15) Thuja occidentalis- morpankh
16) Linum usitatissimum- alsi tomia
17) Elaeocarpus ganitrus- rudraksha, or rudraksh
18) Arecaceae- WATER PALM
19) Dypsis lutescens- Areca palm
20) Hyophorbe lagenicaulis- bottle palm
21) Saraca asoca- Ashoka tree
22) Tabernaemontana divaricate- Crepe jasmine
23) Tabernaemontana divaricate- High brand

Principal
S.D. College, Hoshiarpur

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

24) Bougainvillea glabra- White Bougainvillea

25) Bougainvillea glabra- Red Bougainvillea

26) Rosa persica- Red rose

27) Rosa foetida- Yellow rose

28) Rosa blanca- White rose

29) Jasminum grandiflorum- Chambeli

30) Combretum indicum- Madhumalti.

31) Ocimum tenuiflorum- Shama tulsi

32) Ocimum Sanctum- Rama tulsi

33) Rosa bourboniana- Pink rose

34) Calendula officinalis- Marigold

35) Rosa— Magenta rose

36) Zoysia japonica- Korean lawngrass

37) Portulaca grandiflora- eleven o'clock

38) Ficus elastic- Rubber fig

39) Populus- Cottonwood

40) Brachychiton rupestris- narrow-leaved bottle tree

41) Terminalia arjuna- Arjun tree

42) Melia azedarach- Dek (Dharek)

43) Eucalyptus globulus- Safeda tree

44) Saraca asoca- ashokan vatika

45) Mimusops elengi- Molsari

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

Saprotek consultancy
New Delhi

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

46) Epipremnum aureum- Devil's ivy

47) Monstera deliciosa- Swiss cheese plant

48) Cassia fistula- Golden shower tree/ Amaltas

49) Grevillea robusta- Southern silky oak

50) Cassia fistula- golden shower

51) Hibiscus rosa-sinensis- Shoeblackplant/ hibiscus

52) Kalanchoe Pinnata- Patharchattam

53) Morus nigra- Black Mulberry

54) Duranta erecta- golden dewdrop/ pigeon berry

55) Daphne mezereum- fragrant daphne

56) Zinnia elegans- Common zinnia

57) Senegalia catechu- khair

58) Asparagus officinalis- asparagus

59) Codiaeum variegatum- croton plant

60) Acacia nilotica- Babul

61) Hibiscus rosa- gudhal plant

62) Celosia cristata- Cockscomb

Principal
S.D. College, Hoshiarpur

WASTE DISPOSAL

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduce or eliminates the adverse impact on the environment and human health. A number of processes are involved in efficiently managing waste for a organisation. It is necessary to manage the solid waste properly to reduce the load on waste management system.

Solid waste generation and its management is a burning issue in current days. The rate of generation of solid waste is very high and yet we do not have adequate technology to manage the generated waste. Unscientific handling of solid waste can create threats to public health and environmental safety issues. Thus, it is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out the quantity, volume, type and current management practice of solid waste generation in the S D College Campus.

Results:

Category of waste	Paper waste	Plastic waste	Biodegradable waste	Construction waste	Glass waste	Other waste	Total waste kg/month	Total waste kg/year
Quantity	484.34	129.33	1983.15	291.4	31.16	189.38	3108.77	37305.24
percentage	15.58	04.16	63.79	09.37	1.00	6.09	100	

Organic Solid Waste Disposal Facility (Vermicomposting Pit):

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

New Delhi

ENERGY AUDIT

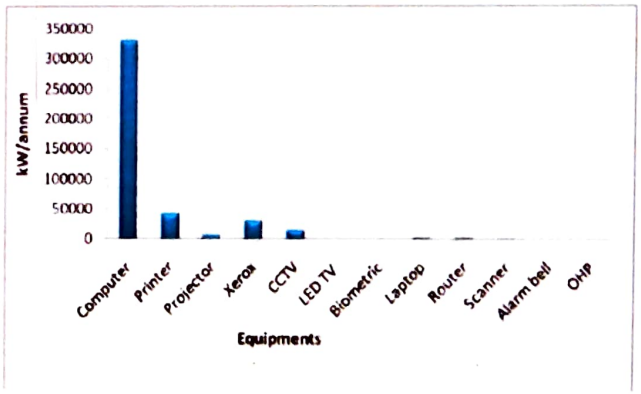
Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also it can be said as "the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems". The energy audit is key to a systematic approach for decision making in the area of energy management. It attempt to balance the total energy inputs with its use, and serve to identify all the energy streams in a facility.

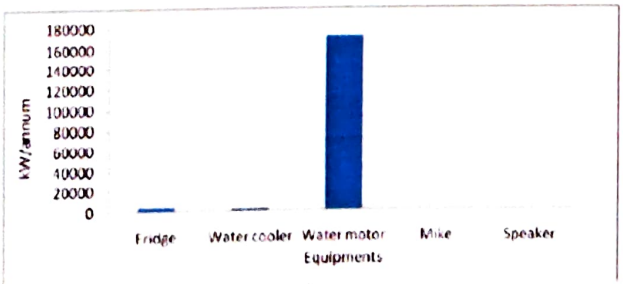
Energy resources utilized by all the departments, support services and the administrative buildings of S D College, Hoshiarpur campus include electricity and liquid petroleum Gas. Major use of the energy is at office, canteen, Classrooms and laboratories, for lighting, Instruction to students, cooking and workshop instruments.

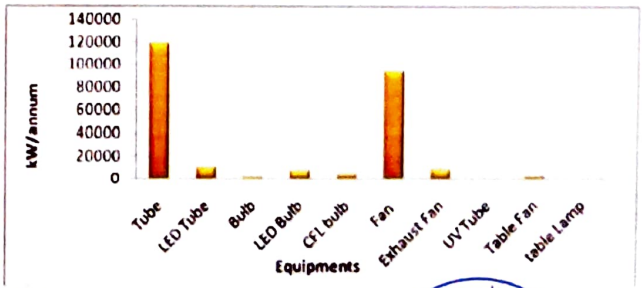
S D College, Hoshiarpur has installed solar power plant having a installed capacity of 11 kW. Electricity is also supplied to the college campus by Punjab State Power Corporation Limited, Mohali, Pb.

Energy Consumption Charts:

(based on annual Consumption)







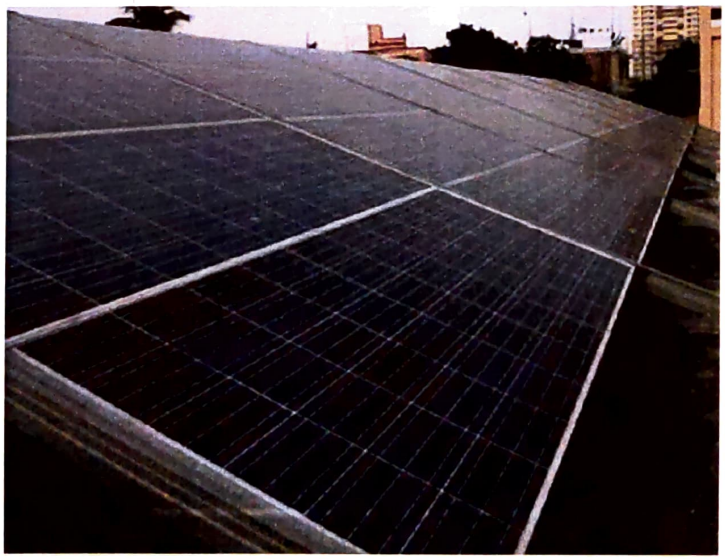
Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

Ecoprotek Consultants
Ecoprotek
New Delhi

ENERGY AUDIT

Solar power plant installed in SD College, Hoshiarpur



Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर

GREEN INITIATIVES by S D College, Hoshiarpur.

Tree plantation drive by College authorities:

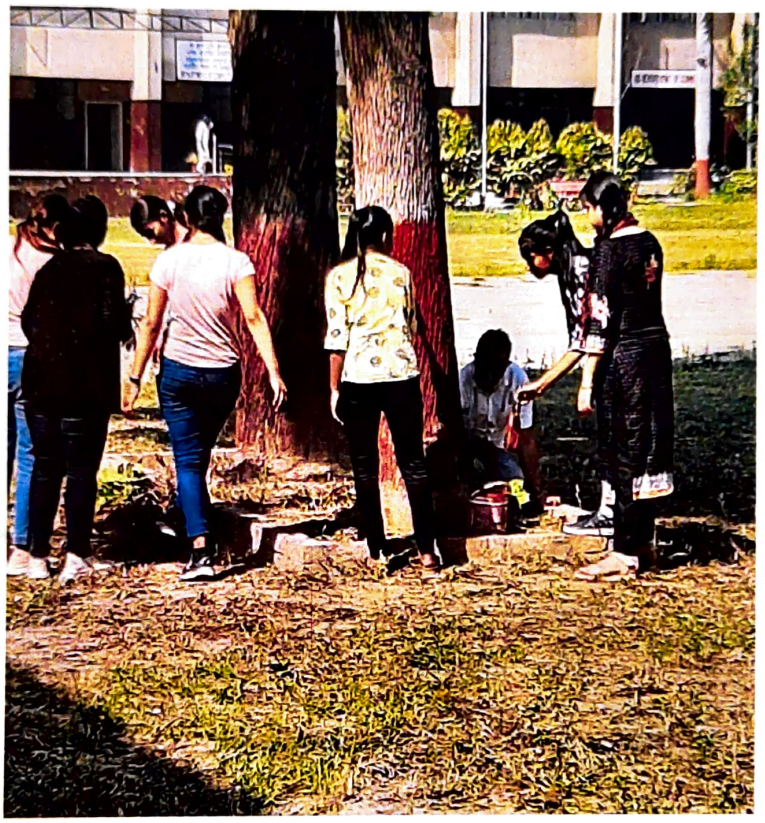
Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

Reprotek consultant's
Reprotek
New Delhi

GREEN INITIATIVES by S D College, Hoshiarpur.

Plantation management and Swatchta drive by College authorities:



Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज हाजिपुर

Flora and Fauna of S D College, Hoshiarpur.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर

protek consultants
Protek
Delhi

Flora and Fauna of S D College, Hoshiarpur.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर

protek consultants
New Delhi

GREEN INITIATIVES by S D College, Hoshiarpur.

Plantation drives by College authorities:

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

New Delhi

Green Audit Report

2019-20

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर

Sanatan Dharma College

Hoshiarpur

A Premier Multi-Faculty, Post-Graduate, Co-Educational Institute

Affiliated to Panjab University, Chandigarh.

About us :

Established in 1973, with vision for holistic education for students from district Hoshiarpur and beyond. In 48 years of service to community, College has produced numerous Visionaries, Officials, Reputable Citizens who are serving Nation and Abroad in their own ways with Gratitude and Honesty.

Our college has grown into an Institution of repute for our Multi-Faculties offering UG/PG programs in Commerce, Arts, Computer Sciences, Management, Fashion, Vocational Sciences, Sciences & Biotechnology.

Vision

Sanatan Dharma College Hoshiarpur is an offspring of sublimes ideals of its founders which in sanskrit read

Tamso Ma Jyotirgamaya

Lead us God, from Darkness to Light

The College aims to spread the light of the Knowledge for the development of a healthy society by offering empowerment through Quality Education coupled with Social & Moral awareness

Mission

- To provide high quality education in fields of **Arts, Commerce, Computers, Management, Sciences and Biotechnology**.
- To facilitate the multifaceted development of students from all sections of the society.
- To produce Dynamic and Competent Youth through development of right skills.
- To produce Leaders, Visionaries, Talents able to nourish societies of Future.
- To inculcate respect for our culture among our society through the development of Social and Moral Consciousness.

Objectives

- Constantly strive to excel in Academics with use of Innovative Teaching and Learning Methods.
- To Mould Students into Responsible Citizens by sensitizing them of Social Concerns and Environmental Issues.
- To promote values of service, duty, tolerance, diligence and compassion in all facets of life, based on teachings of Sanatan Dharma.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultants ecoprotek New Delhi

INTRODUCTION:

The modernization and industrialization are the two important outputs of twentieth century which has made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife,producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment.

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyse environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO_2 from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultant's
ecoprotek
New Delhi

OBJECTIVES:

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

1. To map the Geographical Location of the college
2. To document the floral and faunal diversity of the college
3. To record the meteorological parameter of Hoshiarpur where college is situated
4. To document the ambient environmental condition of weather, air, water and noise of the college
5. To document the waste disposal system
6. To estimate the Energy requirements of the college
7. To report the expenditure on green initiatives during the last five years

METHODOLOGY:

The purpose of the green audit of SD College, Hoshiarpur is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country. The methodology includes:

1. collection of data
2. physical inspection of the campus
3. observation
4. review of the documentation and data analysis.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

Geolocation and Land Use pattern:

S D College, Hoshiarpur is located in Hoshiarpur district located in Bist Doab, Doaba Region the north-east part of the Punjab State. The district is sub mountainous and stretches of river Beas in the north-west. It lies between north latitude 30 degree-9 and 32 degree-05 and east longitude 75° -32 and 76° -12'. It shares common boundaries with Kangra and Una districts of Himachal Pradesh in the north east, Jalandhar and Kapurthala districts (interspersed) in south-west and Gurdaspur district in the north-west.

Aerial View of College Campus:

Total Built up area of College Campus: **4002.34454** Sq. Mtrs.

Total Area of College Campus: **17,401.498** Sq Mtrs

Percentage of Built Up area to Total area of Campus : **23%** (approximately)

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

Approtek Consultants New Delhi

Biodiversity (Flora and Fauna of Campus):

Green Cover of S D College, Hoshiarpur has positively improved the quality of life, not only for the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favourite of birds and many insects. Leaf covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. They also remind us the glorious history of our institution in particular. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see everyday.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय
श्री सनातन धर्म कालेज हाजिपुर पः

ecoprotek consultants
ecoprotek
New Delhi

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

1) Mangifera indica- MANGO tree
2) Aegle marmelos- bael tree
3) Azadirachta indica- Neem tree
4) Ficus benghalensis-Banyan tree
5) Ficus religiosa- Sacred fig
6) Terminalia chebula- Chebulic Myrobalan/ Harad
7) Terminalia bellirica- Baheda
8) Phyllanthus emblica- Indian gooseberry
9) Delonix regia- Gulmohar tree
10) Pterospermum acerifolium- Kanak Champa
11) Tecoma stans- Yellow elder/ KANAK CHAMPA
12) YELLOW Cascabela thevetia- Kaner
13) RED Cascabela thevetia- Kaner
14) Royal Poinciana tree- Gulmohar
15) Thuja occidentalis- morpankh
16) Linum usitatissimum- alsi tomia
17) Elaeocarpus ganitrus- rudraksha, or rudraksh
18) Arecaceae- WATER PALM
19) Dypsis lutescens- Areca palm
20) Hyophorbe lagenicaulis- bottle palm
21) Saraca asoca- Ashoka tree
22) Tabernaemontana divaricate- Crepe jasmine
23) Tabernaemontana divaricate- High brand

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

24) Bougainvillea glabra- White Bougainvillea

25) Bougainvillea glabra- Red Bougainvillea

26) Rosa persica- Red rose

27) Rosa foetida- Yellow rose

28) Rosa blanca- White rose

29) Jasminum grandiflorum- Chambeli

30) Combretum indicum- Madhumalti.

31) Ocimum tenuiflorum- Shama tulsi

32) Ocimum Sanctum- Rama tulsi

33) Rosa bourboniana- Pink rose

34) Calendula officinalis- Marigold

35) Rosa— Magenta rose

36) Zoysia japonica- Korean lawngrass

37) Portulaca grandiflora- eleven o'clock

38) Ficus elastic- Rubber fig

39) Populus- Cottonwood

40) Brachychiton rupestris- narrow-leaved bottle tree

41) Terminalia arjuna- Arjun tree

42) Melia azedarach- Dek (Dharek)

43) Eucalyptus globulus- Safeda tree

44) Saraca asoca- ashokan vatika

45) Mimusops elengi- Molsari

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultants New Delhi

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

46) Epipremnum aureum- Devil's ivy

47) Monstera deliciosa- Swiss cheese plant

48) Cassia fistula- Golden shower tree/ Amaltas

49) Grevillea robusta- Southern silky oak

50) Cassia fistula- golden shower

51) Hibiscus rosa-sinensis- Shoeblackplant/ hibiscus

52) Kalanchoe Pinnata- Patharchattam

53) Morus nigra- Black Mulberry

54) Duranta erecta- golden dewdrop/ pigeon berry

55) Daphne mezereum- fragrant daphne

56) Zinnia elegans- Common zinnia

57) Senegalia catechu- khair

58) Asparagus officinalis- asparagus

59) Codiaeum variegatum- croton plant

60) Acacia nilotica- Babul

61) Hibiscus rosa- gudhal plant

62) Celosia cristata- Cockscomb

Principal
S.D. College, Hoshiarpur

WASTE DISPOSAL

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduce or eliminates the adverse impact on the environment and human health. A number of processes are involved in efficiently managing waste for a organisation. It is necessary to manage the solid waste properly to reduce the load on waste management system.

Solid waste generation and its management is a burning issue in current days. The rate of generation of solid waste is very high and yet we do not have adequate technology to manage the generated waste. Unscientific handling of solid waste can create threats to public health and environmental safety issues. Thus, it is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out the quantity, volume, type and current management practice of solid waste generation in the S D College Campus.

Results:

Category of waste	Paper waste	Plastic waste	Biodegradable waste	Construction waste	Glass waste	Other waste	Total waste kg/month	Total waste kg/year
Quantity	484.34	129.33	1983.15	291.4	31.16	189.38	3108.77	37305.24
percentage	15.58	04.16	63.79	09.37	1.00	6.09	100	

Organic Solid Waste Disposal Facility (Vermicomposting Pit):

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultants
New Delhi

ENERGY AUDIT

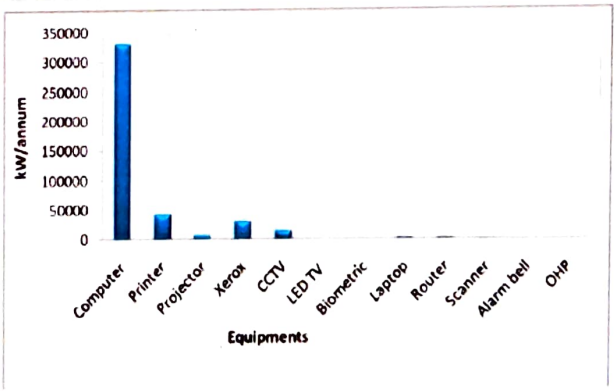
Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also it can be said as "the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems". The energy audit is key to a systematic approach for decision making in the area of energy management. It attempt to balance the total energy inputs with its use, and serve to identify all the energy streams in a facility.

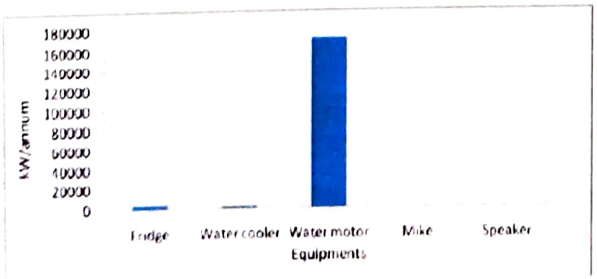
Energy resources utilized by all the departments, support services and the administrative buildings of S D College, Hoshiarpur campus include electricity and liquid petroleum Gas. Major use of the energy is at office, canteen, Classrooms and laboratories, for lighting, Instruction to students, cooking and workshop instruments.

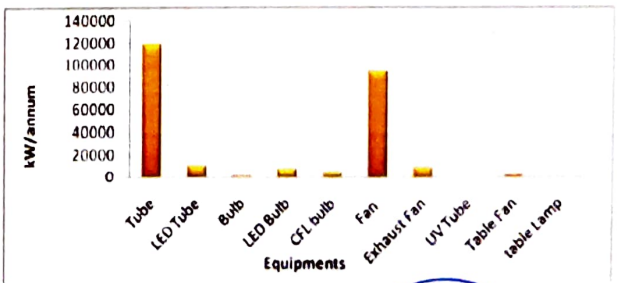
S D College, Hoshiarpur has installed solar power plant having a installed capacity of 11 kW. Electricity is also supplied to the college campus by Punjab State Power Corporation Limited, Mohali, Pb.

Energy Consumption Charts:

(based on annual Consumption)







Principal
S.D. College, Hoshiarpur

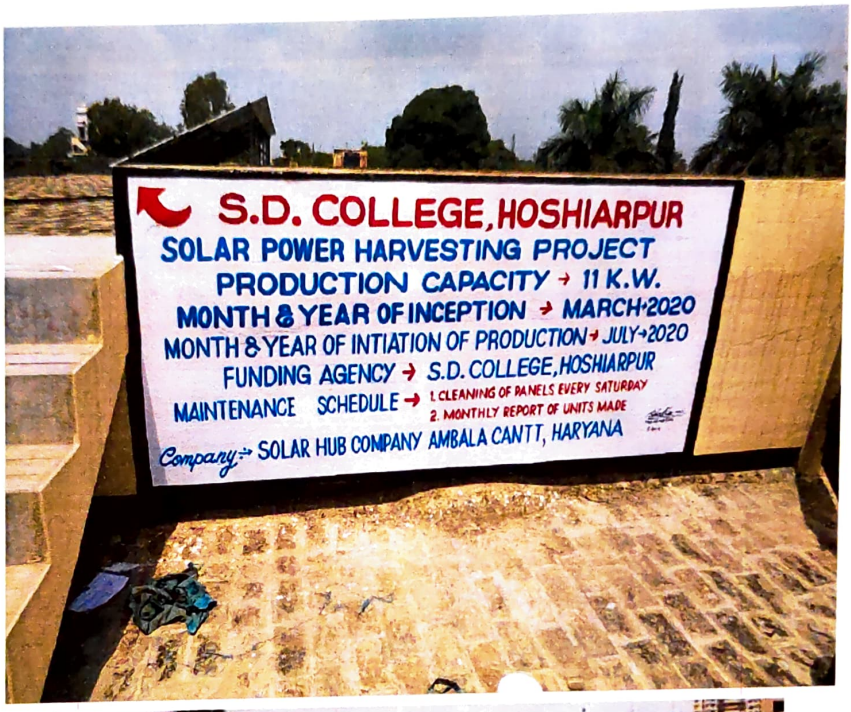
तमसो मा ज्योतिर्गमय

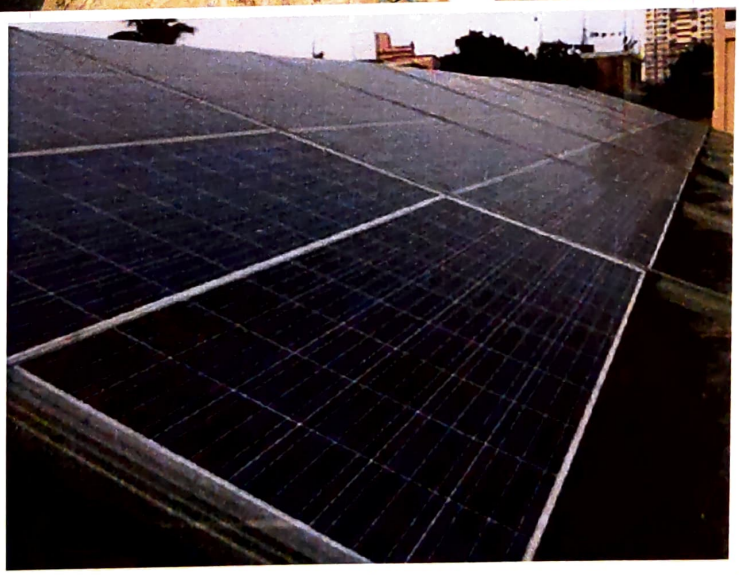
श्री सनातन धर्म कालेज फॉर गर्ल्स

Ecoprotek consultants
Ecoprotek
New Delhi

ENERGY AUDIT

Solar power plant installed in SD College, Hoshiarpur





Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर

ecoprotek consultancy
ecoprotek
New Delhi

GREEN INITIATIVES by S D College, Hoshiarpur.

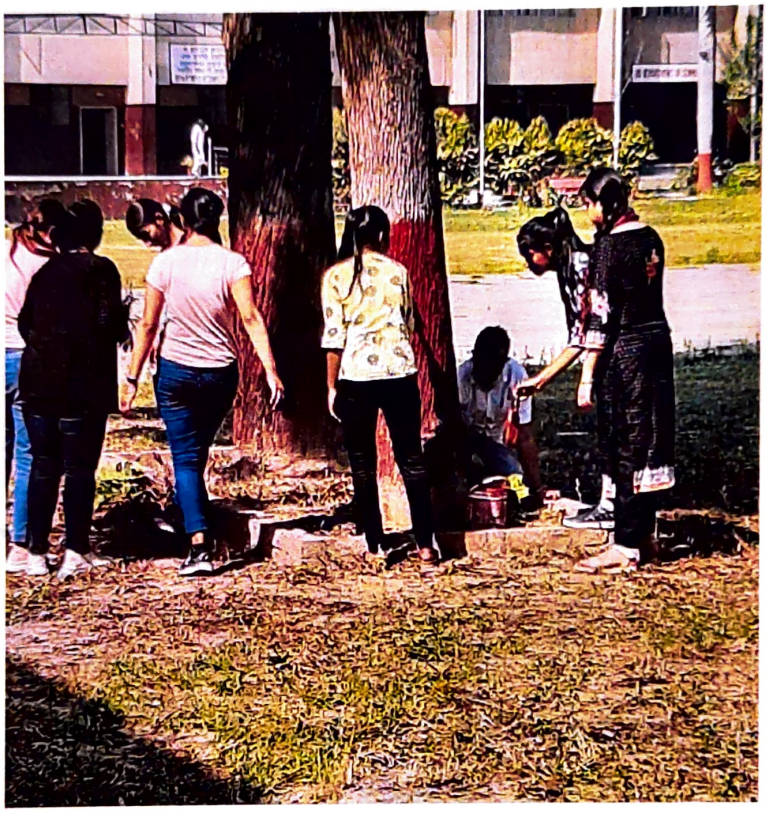
Tree plantation drive by College authorities:

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

GREEN INITIATIVES by S D College, Hoshiarpur.

Plantation management and Swatchta drive by College authorities:



Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालज होशियार पुर

ecoprotek consultants
ecoprotek
New Delhi

Flora and Fauna of S D College, Hoshiarpur.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

Flora and Fauna of S D College, Hoshiarpur.

Principal
S.D. College, Hoshiarpur

GREEN INITIATIVES by S D College, Hoshiarpur.

Plantation drives by College authorities:

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर

Green Audit Report

2018-19

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

Sanatan Dharma College

Hoshiarpur

A Premier Multi-Faculty, Post-Graduate, Co-Educational Institute
Affiliated to Panjab University, Chandigarh.

About us :

Established in 1973, with vision for holistic education for students from district Hoshiarpur and beyond. In 48 years of service to community, College has produced numerous Visionaries, Officials, Reputable Citizens who are serving Nation and Abroad in their own ways with Gratitude and Honesty.

Our college has grown into an Institution of repute for our Multi-Faculties offering UG/PG programs in Commerce, Arts, Computer Sciences, Management, Fashion, Vocational Sciences, Sciences & Biotechnology.

Vision

Sanatan Dharma College Hoshiarpur is an offspring of sublimes ideals of its founders which in sanskrit read

Tamso Ma Jyotirgamaya

Lead us God, from Darkness to Light

The College aims to spread the light of the Knowledge for the development of a healthy society by offering empowerment through Quality Education coupled with Social & Moral awareness

Mission

- To provide high quality education in fields of **Arts, Commerce, Computers, Management, Sciences and Biotechnology.**
- To facilitate the multifaceted development of students from all sections of the society.
- To produce Dynamic and Competent Youth through development of right skills.
- To produce Leaders, Visionaries, Talents able to nourish societies of Future.
- To inculcate respect for our culture among our society through the development of Social and Moral Consciousness.

Objectives

- Constantly strive to excel in Academics with use of Innovative Teaching and Learning Methods.
- To Mould Students into Responsible Citizens by sensitizing them of Social Concerns and Environmental Issues.
- To promote values of service, duty, tolerance, diligence and compassion in all facets of life, based on teachings of Sanatan Dharma.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultants ecoprotek New Delhi

INTRODUCTION:

The modernization and industrialization are the two important outputs of twentieth century which has made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife,producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment.

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyse environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus, it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO_2 from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

Principal
S.D. College, Hoshiarpur

ecoprotek Consultants
New Delhi

OBJECTIVES:

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

1. To map the Geographical Location of the college
2. To document the floral and faunal diversity of the college
3. To record the meteorological parameter of Hoshiarpur where college is situated
4. To document the ambient environmental condition of weather, air, water and noise of the college
5. To document the waste disposal system
6. To estimate the Energy requirements of the college
7. To report the expenditure on green initiatives during the last five years

METHODOLOGY:

The purpose of the green audit of SD College, Hoshiarpur is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country. The methodology includes:

1. collection of data
2. physical inspection of the campus
3. observation
4. review of the documentation and data analysis.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultant's ecoprotek New Delhi

Geolocation and Land Use pattern:

S D College, Hoshiarpur is located in Hoshiarpur district located in Bist Doab, Doaba Region the north-east part of the Punjab State. The district is sub mountainous and stretches of river Beas in the north-west. It lies between north latitude 30 degree-9 and 32 degree-05 and east longitude 75° -32 and 76° -12'. It shares common boundaries with Kangra and Una districts of Himachal Pradesh in the north east, Jalandhar and Kapurthala districts (interspersed) in south-west and Gurdaspur district in the north-west.

Aerial View of College Campus:

Total Built up area of College Campus: **4002.34454** Sq. Mtrs.

Total Area of College Campus: **17,401.498** Sq Mtrs

Percentage of Built Up area to Total area of Campus : **23%** (approximately)

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultant's
ecoprotek
New Delhi

Biodiversity (Flora and Fauna of Campus):

Green Cover of S D College, Hoshiarpur has positively improved the quality of life, not only for the college fraternity but also the people around of the college in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of the sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favourite of birds and many insects. Leaf covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colours. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality. They also remind us the glorious history of our institution in particular. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see everyday.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर पं.

ecoprotek consultants

ecoprotek

New Delhi

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

1) Mangifera indica- MANGO tree
2) Aegle marmelos- bael tree
3) Azadirachta indica- Neem tree
4) Ficus benghalensis-Banyan tree
5) Ficus religiosa- Sacred fig
6) Terminalia chebula- Chebulic Myrobalan/ Harad
7) Terminalia bellirica- Baheda
8) Phyllanthus emblica- Indian gooseberry
9) Delonix regia- Gulmohar tree
10) Pterospermum acerifolium- Kanak Champa
11) Tecoma stans- Yellow elder/ KANAK CHAMPA
12) YELLOW Cascabela thevetia- Kaner
13) RED Cascabela thevetia- Kaner
14) Royal Poinciana tree- Gulmohar
15) Thuja occidentalis- morpankh
16) Linum usitatissimum- alsi tomia
17) Elaeocarpus ganitrus- rudraksha, or rudraksh
18) Arecaceae- WATER PALM
19) Dypsis lutescens- Areca palm
20) Hyophorbe lagenicaulis- bottle palm
21) Saraca asoca- Ashoka tree
22) Tabernaemontana divaricate- Crepe jasmine
23) Tabernaemontana divaricate- High brand

Principal
S.D. College, Hoshiarpur

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

24) Bougainvillea glabra- White Bougainvillea

25) Bougainvillea glabra- Red Bougainvillea

26) Rosa persica- Red rose

27) Rosa foetida- Yellow rose

28) Rosa blanca- White rose

29) Jasminum grandiflorum- Chambeli

30) Combretum indicum- Madhumalti.

31) Ocimum tenuiflorum- Shama tulsi

32) Ocimum Sanctum- Rama tulsi

33) Rosa bourboniana- Pink rose

34) Calendula officinalis- Marigold

35) Rosa— Magenta rose

36) Zoysia japonica- Korean lawngrass

37) Portulaca grandiflora- eleven o'clock

38) Ficus elastic- Rubber fig

39) Populus- Cottonwood

40) Brachychiton rupestris- narrow-leaved bottle tree

41) Terminalia arjuna- Arjun tree

42) Melia azedarach- Dek (Dharek)

43) Eucalyptus globulus- Safeda tree

44) Saraca asoca- ashokan vatika

45) Mimusops elengi- Molsari

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultants
ecoprotek
New Delhi

LIST OF SCIENTIFIC NAMES OF PLANTS AND TREES IN COLLEGE

46) Epipremnum aureum- Devil's ivy

47) Monstera deliciosa- Swiss cheese plant

48) Cassia fistula- Golden shower tree/ Amaltas

49) Grevillea robusta- Southern silky oak

50) Cassia fistula- golden shower

51) Hibiscus rosa-sinensis- Shoeblackplant/ hibiscus

52) Kalanchoe Pinnata- Patharchattam

53) Morus nigra- Black Mulberry

54) Duranta erecta- golden dewdrop/ pigeon berry

55) Daphne mezereum- fragrant daphne

56) Zinnia elegans- Common zinnia

57) Senegalia catechu- khair

58) Asparagus officinalis- asparagus

59) Codiaeum variegatum- croton plant

60) Acacia nilotica- Babul

61) Hibiscus rosa- gudhal plant

62) Celosia cristata- Cockscomb

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultancy
ecoprotek
New Delhi

WASTE DISPOSAL

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduce or eliminates the adverse impact on the environment and human health. A number of processes are involved in efficiently managing waste for a organisation. It is necessary to manage the solid waste properly to reduce the load on waste management system.

Solid waste generation and its management is a burning issue in current days. The rate of generation of solid waste is very high and yet we do not have adequate technology to manage the generated waste. Unscientific handling of solid waste can create threats to public health and environmental safety issues. Thus, it is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out the quantity, volume, type and current management practice of solid waste generation in the S D College Campus.

Results:

Category of waste	Paper waste	Plastic waste	Biodegradable waste	Construction waste	Glass waste	Other waste	Total waste kg/month	Total waste kg/year
Quantity	484.34	129.33	1983.15	291.4	31.16	189.38	3108.77	37305.24
percentage	15.58	04.16	63.79	09.37	1.00	6.09	100	

Organic Solid Waste Disposal Facility (Vermicomposting Pit):

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

ecoprotek consultants
ecoprotek
New Delhi

ENERGY AUDIT

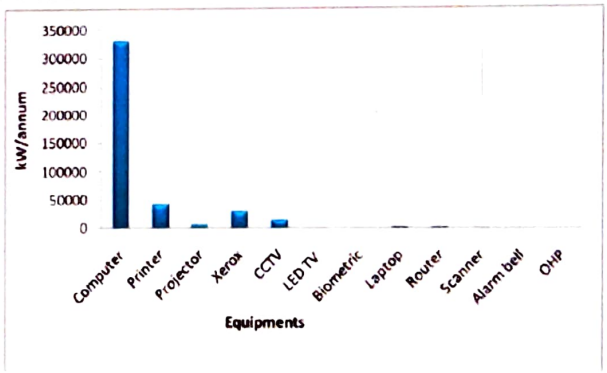
Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also it can be said as "the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems". The energy audit is key to a systematic approach for decision making in the area of energy management. It attempt to balance the total energy inputs with its use, and serve to identify all the energy streams in a facility.

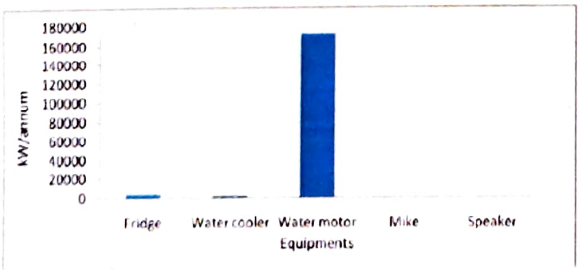
Energy resources utilized by all the departments, support services and the administrative buildings of S D College, Hoshiarpur campus include electricity and liquid petroleum Gas. Major use of the energy is at office, canteen, Classrooms and laboratories, for lighting, Instruction to students, cooking and workshop instruments.

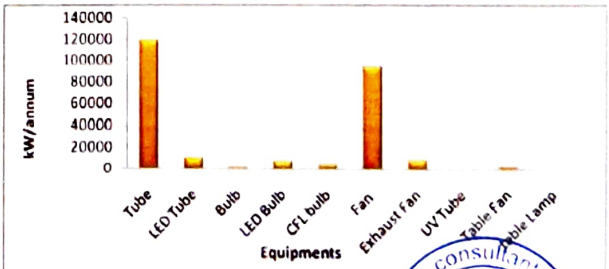
S D College, Hoshiarpur has installed solar power plant having a installed capacity of 11 kW. Electricity is also supplied to the college campus by Punjab State Power Corporation Limited, Mohali, Pb.

Energy Consumption Charts:

(based on annual Consumption)







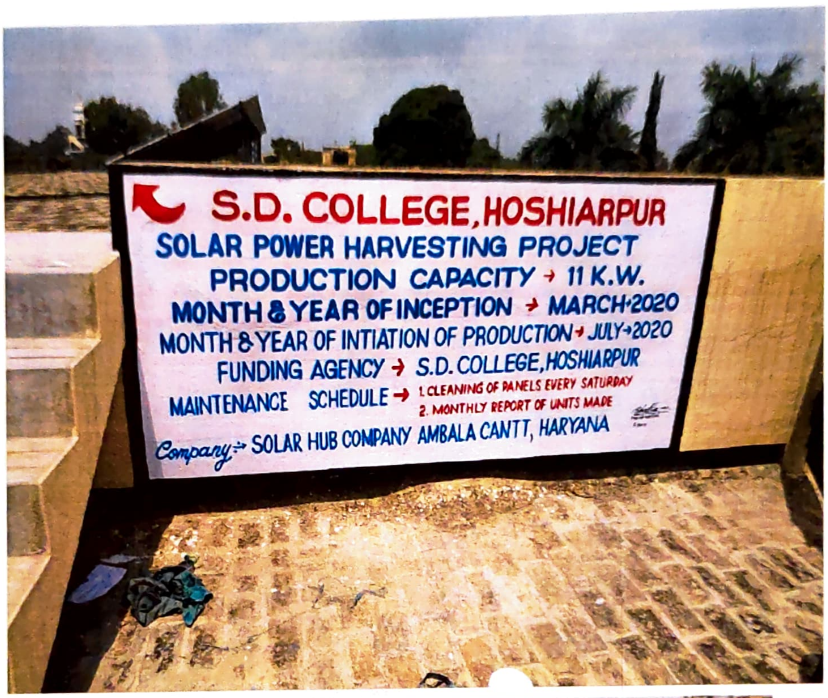
Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय
श्री सनातन धर्म कालेज हाशियार पुर

Ecoprotek Consultant's
Ecoprotek
New Delhi

ENERGY AUDIT

Solar power plant installed in SD College, Hoshiarpur



Principal
S.D. College, Hoshiarpur

ecoprotek consultants
ecoprotek
New Delhi

GREEN INITIATIVES by S D College, Hoshiarpur.

Tree plantation drive by College authorities:

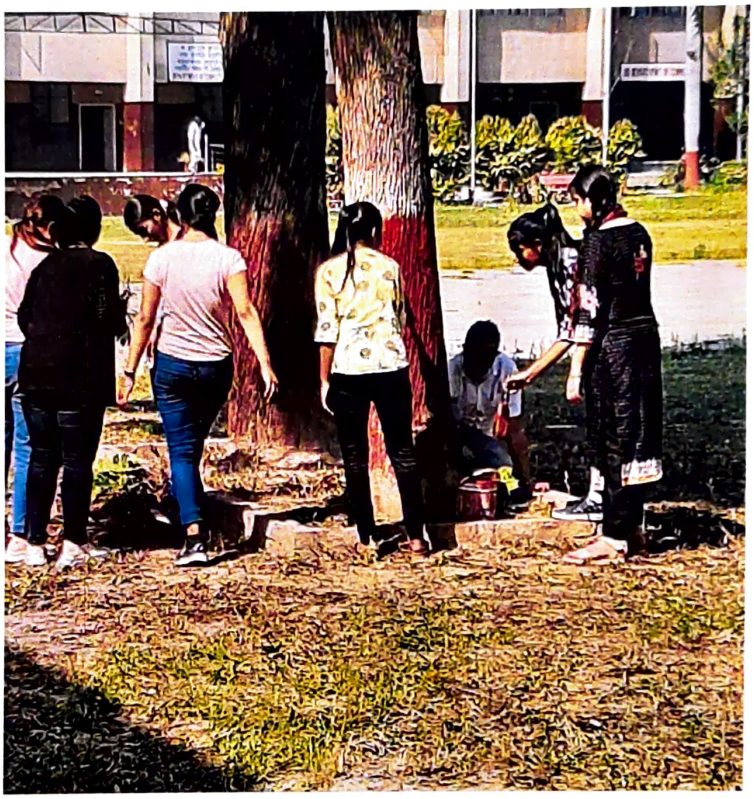
Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

New Delhi

GREEN INITIATIVES by S D College, Hoshiarpur.

Plantation management and Swatchta drive by College authorities:



Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर पंजाब

ecoprotek consultants

ecoprotek

New Delhi

Flora and Fauna of S D College, Hoshiarpur.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

श्री सनातन धर्म कालेज होशियारपुर

ecoprotek consultancy's
ecoprotek
New Delhi

Flora and Fauna of S D College, Hoshiarpur.

Principal
S.D. College, Hoshiarpur

तमसो मा ज्योतिर्गमय

GREEN INITIATIVES by S D College, Hoshiarpur.

Plantation drives by College authorities:

Principal
S.D. College, Hoshiarpur

Job Number	AQD-TRS-1872
Dated	15/09/2018

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Air Quality Determination

Sample Number: AQD-2018-09-258

Date: 02/09/2018

Client	Principal, S D College
Address	S D College, Deep Nagar, Phagwara Rd, Hoshiarpur, Punjab. 146001

Parameter	Result
NO_2	31.4 µg/m_3, AQI 31 (Very Good)
NO	12.67 µg/m_3, AQI 12 (Good)
O_3	34.12 µg/m_3, AQI 34 (Good)
PM2.5	24.21 µg/m_3, AQI 24 (Good)
PM10	64.2 µg/m_3, AQI 64 (Satisfactory)
CO	44.2 µg/m_3, AQI 22 (Good)
Humidity	32%
Barometric Pressure	1012 hPa
Wind Speed	12-19 m/s
Wind Direction	39.6529°

ecoprotek consultants ecoprotek New Delhi

Conclusion: Air Quality of Premises is **Good** (Overall AQI 38).

For ecoprotek consultants

Authorised Signatory

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	WQ-TRS-1872
Dated	15/09/2018

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2018-09-258

Date: 02/09/2018

Client	Principal, S D College
Address	S D College, Deep Nagar, Phagwara Rd, Hoshiarpur, Punjab. 146001

Parameter	Result
pH	7.2
colour (hazen units)	<3
taste & odour	333
TDS (mg/l)	<1
Turbidity (NTU)	16
Chlorides (mg/l)	49
Sulphates (mg/l)	5.209
Nitrates (mg/l)	21.4
Total Hardness (as CaCO3) (mg/l)	367

ecoprotek consultants New Delhi

for: Ecoprotek Consultants

Authorised Signatory

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	WQ-TRS-1872
Dated	15/09/2018

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2018-09-258

Date: 02/09/2018

Parameter	Result
Fluorides (mg/l)	0.9
Iron (mg/l)	0.4
Manganese (mg/l)	0.1
Calcium (mg/l)	29.1
Magnesium (mg/l)	19
Copper (mg/l)	0.4
Zinc (mg/l)	Nil
Chromium (mg/l)	0.07
Total Coliform	Zero
Fecal Coliform	Zero

Conclusion: Water samples are fit for Drinking Purposes

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	AQD-TRS-2133
Dated	01/07/2019

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Air Quality Determination

Sample Number: AQD-2019-06-258

Date: 28/06/2019

Client	Principal, S D College
Address	S D College, Deep Nagar, Phagwara Rd, Hoshiarpur, Punjab. 146001

Parameter	Result
NO_2	14.3 µg/m_3, AQI 14 (Very Good)
NO	9.97 µg/m_3, AQI 10 (Good)
O_3	29.52 µg/m_3, AQI 29 (Good)
PM2.5	41.39 µg/m_3, AQI 41 (Good)
PM10	79.2 µg/m_3, AQI 79 (Satisfactory)
CO	24.1 µg/m_3, AQI 12 (Good)
Humidity	11%
Barometric Pressure	1010 hPa
Wind Speed	22-26 m/s
Wind Direction	39.6529°

ecoprotek consultants ecoprotek New Delhi

Conclusion: Air Quality of Premises is **Good** (Overall AQI 38)

Principal
S.D. College, Hoshiarpur

Job Number	WQ-TRS-2133
Dated	01/07/2019

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2019-06-258

Date: 28/06/2019

Client	Principal, S D College
Address	S D College, Deep Nagar, Phagwara Rd, Hoshiarpur, Punjab. 146001

Parameter	Result
pH	7.2
colour (hazen units)	<6
taste & odour	312
TDS (mg/l)	<1
Turbidity (NTU)	16
Chlorides (mg/l)	49
Sulphates (mg/l)	5.309
Nitrates (mg/l)	20.3
Total Hardness (as CaCO3) (mg/l)	274

ecoprotek consultants New Delhi

Principal
S.D. College, Hoshiarpur

Job Number	WQ-TRS-2133
Dated	01/07/2019

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2019-06-258

Date: 28/06/2019

Parameter	Result
Fluorides (mg/l)	0.9
Iron (mg/l)	0.3
Manganese (mg/l)	0.1
Calcium (mg/l)	29.7
Magnesium (mg/l)	20
Copper (mg/l)	0.2
Zinc (mg/l)	Nil
Chromium (mg/l)	0.06
Total Coliform	Zero
Fecal Coliform	Zero

Conclusion: Water samples are fit for Drinking Purposes

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	AQD-TRS-2609
Dated	01/03/2021

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Air Quality Determination

Sample Number: AQD-2021-02-98

Date: 17/02/2021

Client	Principal, S D College
Address	S D College, Deep Nagar, Phagwara Rd, Hoshiarpur, Punjab. 146001

Parameter	Result
NO_2	31.3 µg/m_3, AQI 31 (Good)
NO	24.12 µg/m_3, AQI 24 (Good)
O_3	29.26 µg/m_3, AQI 29 (Good)
PM2.5	31.74 µg/m_3, AQI 31 (Good)
PM10	67.32 µg/m_3, AQI 67 (Satisfactory)
CO	28.82 µg/m_3, AQI 14 (Good)
Humidity	37%
Barometric Pressure	1014 hPa
Wind Speed	5-6 m/s
Wind Direction	13.0689°

Conclusion: Air Quality of Premises is **Good** (Overall AQI 32)

ecoprotek consultants ecoprotek New Delhi

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	WQ-TRS-2609
Dated	01/03/2021

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2021-02-98

Date: 17/02/2021

Client	Principal, S D College
Address	S D College, Deep Nagar, Phagwara Rd, Hoshiarpur, Punjab. 146001

Parameter	Result
pH	7.1
colour (hazen units)	<4
taste & odour	327
TDS (mg/l)	<1
Turbidity (NTU)	16
Chlorides (mg/l)	49
Sulphates (mg/l)	5.219
Nitrates (mg/l)	22.5
Total Hardness (as CaCO3) (mg/l)	375

ecoprotek consultants New Delhi

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	WQ-TRS-2609
Dated	01/03/2021

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2020-01-22

Date: 23/01/2020

Parameter	Result
Fluorides (mg/l)	0.92
Iron (mg/l)	0.3
Manganese (mg/l)	0.1
Calcium (mg/l)	29.3
Magnesium (mg/l)	18
Copper (mg/l)	0.4
Zinc (mg/l)	Nil
Chromium (mg/l)	0.05
Total Coliform	Zero
Fecal Coliform	Zero

Conclusion: Water samples are fit for Drinking Purposes

ecoprotek consultants ecoprotek New Delhi

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	AQD-TRS-2471
Dated	01/02/2020

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Air Quality Determination

Sample Number: AQD-2020-01-22

Date: 23/01/2020

Client	Principal, S D College
Address	S D College, Deep Nagar, Phagwara Rd, Hoshiarpur, Punjab. 146001

Parameter	Result
NO_2	25.3 µg/m_3, AQI 25 (Good)
NO	13.42 µg/m_3, AQI 13 (Good)
O_3	31.62 µg/m_3, AQI 31 (Good)
PM2.5	63.14 µg/m_3, AQI 63 (Satisfactory)
PM10	98.22 µg/m_3, AQI 98 (Satisfactory)
CO	31.22 µg/m_3, AQI 15 (Good)
Humidity	79%
Barometric Pressure	1014 hPa
Wind Speed	2-6 m/s
Wind Direction	18.0329°

ecoprotek consultants New Delhi

Conclusion: Air Quality of Premises is **Satisfactory** (Overall AQI 68)

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	WQ-TRS-2471
Dated	01/02/2020

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2020-01-22

Date: 23/01/2020

Client	Principal, S D College
Address	S D College, Deep Nagar, Phagwara Rd, Hoshiarpur, Punjab. 146001

Parameter	Result
pH	7.1
colour (hazen units)	<5
taste & odour	287
TDS (mg/l)	<1
Turbidity (NTU)	16
Chlorides (mg/l)	49
Sulphates (mg/l)	5.18
Nitrates (mg/l)	22.3
Total Hardness (as CaCO3) (mg/l)	282

ecoprotek consultants ecoprotek New Delhi

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	WQ-TRS-2471
Dated	01/02/2020

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2020-01-22

Date: 23/01/2020

Parameter	Result
Fluorides (mg/l)	0.9
Iron (mg/l)	0.4
Manganese (mg/l)	0.1
Calcium (mg/l)	29.1
Magnesium (mg/l)	21
Copper (mg/l)	0.1
Zinc (mg/l)	Nil
Chromium (mg/l)	0.05
Total Coliform	Zero
Fecal Coliform	Zero

Conclusion: Water samples are fit for Drinking Purposes

ecoprotek consultants ecoprotek New Delhi

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	AQD-TRS-2133
Dated	24/02/2023

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Air Quality Determination

Sample Number: AQD-2023-02-25 Date: 24/02/2023

Client	**Principal**
Address	**Sanatan Dharma College, Hoshiarpur**

Parameter	Result
NO_2	14.3 µg/m_3, AQI 14 (Very Good)
NO	9.97 µg/m_3, AQI 10 (Good)
O_3	29.52 µg/m_3, AQI 29 (Good)
PM2.5	41.39 µg/m_3, AQI 41 (Good)
PM10	79.2 µg/m_3, AQI 79 (Satisfactory)
CO	24.1 µg/m_3, AQI 12 (Good)
Humidity	11%
Barometric Pressure	1010 hPa
Wind Speed	22-26 m/s
Wind Direction	39.6529°

Conclusion: Air Quality of Premises is **Good** (Overall AQI 38)

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

Principal
S.D. College, Hoshiarpur

Job Number	WQ-TRS-1857
Dated	24/02/2023

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2023-02-009

Date :20/02/2023

Client	**Principal**
Address	**Sanatan Dharma College, Hoshiarpur**

Parameter	Result	Standards
pH	7.2	IS3025
colour (hazen units)	<3	IS3025
taste & odour	309	IS3025
TDS (mg/l)	<105	IS3025
Turbidity (NTU)	15	IS3025
Chlorides (mg/l)	143	IS3025
Sulphates (mg/l)	32	IS3025
Nitrates (mg/l)	23.5	IS3025
Total Hardness (as CaCO3) (mg/l)	298	

Principal
S.D. College, Hoshiarpur

ecoprotek consultants New Delhi

Authorised Analyst

Job Number	WQ-TRS-1857
Dated	24/02/2023

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Test Report : Water Quality

Sample Number: WQD-2019-08-134 Date: 20/02/2023

Parameter	Result	Standards
Fluorides (mg/l)	0.89	IS3025
Iron (mg/l)	0.29	IS3025
Manganese (mg/l)	13.1	IS3025
Calcium (mg/l)	33.7	IS3025
Magnesium (mg/l)	15.8	IS3025
Copper (mg/l)	0.3	IS3025
Zinc (mg/l)	0.02	IS3025
Chromium (mg/l)	0.01	Annex J IS 13428
Total Coliform	Zero	IS5401 (p1)
Fecal Coliform	Zero	IS5887

Conclusion: WQI is 67. Water samples are fit for Drinking Purposes

Principal
S.D. College, Hoshiarpur

Authorised Analyst

J-38, Saket, Delhi | M-248/1, Aerocity, Mohali
info@ecoprotek.co.in

ecoprotek

Air | Water | Soil | Effluent | Chemicals Analysis | Consultancy

Audit certificate

The ecoprotek team has authored this report for the Sanatan Dharma College, Hoshiarpur, based on input provided by staff members and the accompanying data. The audit involved active participation from staff members to assess the viability of potential actions on the campus. Through observations, measurements, discussions, and meetings with the team, data was gathered and analyzed. Assumptions were formulated based on the team's input, and while every effort has been made to ensure accuracy in the report's preparation, the information presented in this summary has been compiled in good faith, with best estimates utilized where data was incomplete. Careful consideration was given to arriving at assumptions and estimates; however, no explicit or implied representation, warranty, or undertaking is made, and the ecoprotek team and its members disclaim any responsibility for direct or consequential losses resulting from the use of the information, statements, or recommendations provided in the report.

ecoprotek consultants

Dr. Kanwar Dhanjal
Lead Auditor

Principal
S.D. College, Hoshiarpur

About ecoprotek

M/s. Ecoprotek is a recognized Accredited Energy Audit Firm under the Bureau of Energy Efficiency, Ministry of Power, Government of India. It stands as a rapidly growing provider of Energy Audit and Energy services, having successfully completed numerous projects across various energy-intensive sectors and states within India. With a wealth of experience, the directors and associate team members boast extensive expertise in the field of Energy Audit, having conducted over 150 detailed Energy Audits to date. The team comprises highly qualified and seasoned professionals with individual credentials enriched by their previous associations with reputable organizations in the Energy Audit Services sector. The company is headquartered in Delhi.

Energy and Environmental Auditor:

Dr Kanwar Dhaliwal, PhD Biotechnology, M. Tech was the lead auditor for purpose of this report he is NPC, Chandigarh and QCI Certified Auditor.

Accredited Energy Auditor with BEE (AEA-0174)

List of Equipment Used

- Power & Harmonics Analyser KryKArd ALM 31
- Temperature Gun MECO 550T
- Lux Meter MECO G 930P
- Flute Gas Analyser KANE – 905

Principal
S.D. College, Hoshiarpur