INSTITUTIONAL VALUES AND BEST PRACTICES

TRIDENT ACADEMY OF TECHNOLOGY (TAT), BHUBANESWAR

CRITERIA – 7

7.1.3 ***Quality audits on environment and energy regularly undertaken by the Institution. The institutional environment and energy initiatives.***

TRIDENT ACADEMY OF TECHNOLOGY (TAT),

BHUBANESWAR-751024

TRIDENT ACADEMY OF TECHNOLOGY

Ref: TAT/P/420/2018

Name of the policy	Smoke free Policy	Department responsible	All
		Prepared by	P.K.Nayak
Department	All	Checked by	Dr.D.N.Pattanayak
Effective date	11-4-2018	Approved by	Principal
No. of pages	1		

1. Purpose:

The main objective of the tobacco and alcohol free Policy are to provide a health enhancing clean environment to the residents, to improve the air quality in the premises and to reduce the hardships and suffering faced by non smokers in the campus.

2. **Responsible centre**: Office of the Principal

3. Procedure:

The following procedures are to be adopted for the above:

a) The use of smoke and tobacco is to be banned within the boundary of the Institute.

b) The purchase and sale of smoking and tobacco are banned inside the Institute campus.

c) Vehicles emitted smoke in excess of the permissible limit are to be banned from entering the Institute campus.

d) Vehicles are to be monitor for the pollution testing certificates.

e) Burning of garbage is to be prohibited inside the Institute campus.

f) The use of alcohol is to be banned inside the Institute campus.

g) The use of any form of intoxicant is to be prohibited.

h) Students, teachers, staff, and all other stakeholders of Institute are to be aware and awakened about the disciplinary action, health, and social ills of drugs.

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i) Code of Conduct is to be provided to students and staff regarding smoking, tobacco and alcohol.

j) The breach of policy by students and staff is to be considered a serious offence and to be prosecuted under disciplinary action.

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TRIDENT ACADEMY OF TECHNOLOGY

Ref: TAT/P/8/8/2021

Name of the policy	Sustainable Policy	Department responsible	All
		Prepared by	Satya Sundar Mishra
Department	All	Checked by	Dr.A.Baral
Effective date	26-4-2021	Approved by	Principal
No. of pages	1		

1. **Purpose:**
   The infrastructure of Trident Academy of Technology like several buildings viz.. academic. administrative and hostel have been built in the quarries utilizing the laterite blocks to minimize the impact on the environment and maintain the integrity of the ecosystem. The campus is now a restored ecosystem with various native plant species (seasonal grass species. annual shrubs (flowering to medicinal) and perennial tree species (fruit bearing. timber. avenue and economic species).
2. **Responsibility Centre:** Principal
3. **Procedure:**
   Institute has considered following policy guidelines to restore the land area in the background of sustainability.
   a. Assisted regeneration of all species planted shall be native to the region with no exotic species. The inclusion of exotic species shall be considered on the basis of functional traits not affecting the native species community structure. The species considered for planting shall include seasonal, annual and perennial species, which can be grasses, shrubs and trees species
   b. Habitats of native animals and bird shall be considered while restoring the land area to ensure that their food web is protected.
   c. Students' community shall be engaged in planting. conservation and education on restoration of ecology and sustainability principles.
   d. Shall increase and improve the diversity of functional species without disturbing the biodiversity hotspots of native species. Likewise, economic species and medicinal plant species shall be included for economic benefits to enhance the natural resource management.

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Ref: TAT/P/816/2021

Name of the policy	Energy Efficiency Standards for Buildings Policy	Department responsible	All
		Prepared by	Lohit Kumar Sahoo
Department	All	Checked by	Dr.A.Baral
Effective date	26-4-2021	Approved by	Principal
No. of pages	1		

1. **Purpose:**

The main objective of this policy is to formulate comprehensive guidelines and regulations on the refurbishment and construction of new buildings, the renovation and replacement of old infrastructure, and energy-saving and carbon-reduction practices to be followed by all users of the university.

2. **Responsibility center:** Office of the Operation

3. **Procedure:**

i. We are committed to all new buildings on campus passing **Item** SDG-6-2-4 of the Green Building Label certification process.

ii. Split-type air-conditioners are purchased in accordance with the latest environmental regulations and are inverter air-conditioners with Level 1 standards in terms of energy efficiency (**ISEER > 4.5**).

iii. LED energy-saving lamps are installed when constructing new buildings and during the refurbishment of old buildings.

iv. All the new buildings will be equipped with BLDC ceiling fans. Which consumes 75% less power than normal ceiling fans.

v. All installed power transformers are amorphous, environmentally friendly, and energy-saving (core loss is reduced by 80% compared to a traditional iron core.

vi. All the campus buildings should be made up of laterite stone and fly ash materials. The local material like soil and laterite from excavations are reused for the construction. Laterite bricks are natural stones and have cooling properties hence they keep the home cool during summers which is a great benefit for hot regions. Due to its natural properties, laterite bricks have good thermal insulation properties.

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TRIDENT ACADEMY OF TECHNOLOGY

Ref: TAT/P/817/2021

Name of the policy	Zero Emission Policy	Department responsible	All
		Prepared by	Lohit Kumar Sahoo
Department	All	Checked by	Dr.A.Baral
Effective date	26-4-2021	Approved by	Principal
No. of pages	2		

Introduction

Vehicular emission is major pollutant in the institutional campus, which is one of the subjects of concern for the green campus. The majority of vehicles are based on the fossil fuel. Thus, it is challenging to reduce the vehicular emission. Implementing a net zero emission policy in a university campus requires collaboration, commitment, and innovation from various stakeholders, including students, faculty, staff and administration. Trident academy of Technology has an energy conservation pledge, promising to encourage the zero emission in the campus. Trident academy of Technology commits to develop an emission free campus in a phased manner. This policy addresses all types of emissions including vehicular emission.

Objectives

i. To develop a emission free campus

ii. To implement processes, procedure, and initiatives that ensure compliance with environmental legislation and best practice

Scope

1. The incineration of any form of waste, whether organic or synthetic, shall be strictly prohibited within the campus.
2. The usage of coal shall be strictly forbidden in the campus premises.
3. Vehicles emitting smoke shall not be permitted to enter the campus
4. A sustainable transportation alternative shall be implemented within the campus to curtail the use of private vehicles.

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5. The Institute shall actively promote the adoption of electric vehicles among students and staff. They shall be provided with amenities such as charging stations and a 50% discount on permanent parking fees.
6. The Institute shall conduct educational campaigns, workshops, and seminars to enhance awareness regarding the net zero emission policy.
7. The policy shall establish a framework for monitoring and reporting to trace the progress made towards achieving the net zero emission goal.

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TRIDENT ACADEMY OF TECHNOLOGY

Energy Conservation Pledge

Trident Academy of Technology is fully dedicated and committed towards energy conservation. We commit to use 100% renewable energy in a phased manner. In order to achieve the target, we hereby pledge to conserve energy by:

- Use of 100% renewable energy by generating our own solar power for all existing buildings by 2030.
- Using electric Vehicles for transport.
- Preventing wastage of electricity and water.
- Making a plastic free campus.
- Minimizing the use of paper.
- Recycling the waste.
- Turning lights out in empty rooms.
- Unplugging devices and appliances when not in use.
- Providing maximum ventilation facilities in the rooms of campus to reduce use of electricity 100% in day time.
- Encouraging zero emission vehicles.
- Incorporating the energy conservation in academic curriculum of the institute.
- Launching awareness programs through various student's clubs in the institute campus.

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Ref: TAT/P/429/2018

Name of the policy	Climate Action Policy	Department responsible	All
		Prepared by	P.K.Nayak
Department	All	Checked by	Dr. D.N.Pattanayak
Effective date	11-4-2018	Approved by	Principal
No. of pages	3		

1. **Purpose:**

Given the challenges of climate change, the time has come to develop adaptability to it at the individual, institution, national and global levels. In this direction, the government, scientists, educational institutions, civil societies, etc. are making efforts under the guidelines of the United Nations. Understanding its responsibility, Trident Academy of Technology is ready and committed to contribute towards combating the adverse effects of climate change. The implementation and follow-up of the present climate action plan of Trident Academy of Technology is our commitment, therefore, we have been striving towards developing a green campus for a long time. Trident Academy of Technology has followed the green, environmental, energy efficient processes in the campus. I hope that the present climate action plan will not only fulfil its objectives at the university level but will also create awareness and a new sense of responsibility among students, teachers and other staff.

2. **Responsibility Centre: Principal**

3. **Procedure:**

Climate change is one of the biggest problems in the world Climate change has the potential to have huge consequences on the world & it's economy, environment, and social systems. To overcome these consequences, the governments, scientists, and civil societies across the world are engaged in their efforts. The issue of climate change is the most debatable aspect and has been discussed at various United Nations & it's; forums, conferences, and conventions The Climate Change action is one of the goals of Sustainable Development Goals, to be achieved by 2030.

Given the seriousness of climate change, many nations and institutions of the world have made their own climate charge action plans. India & it's National Action Plan for Climate Change was launched in 2008 aiming to mitigate and adapt the adverse

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Impacts of climate change. The National Action Plan for Climate Change includes 8 missions.

Trident Academy of Technology as an institute is committed to address all the issues related to the adverse impacts of climate change. The Climate Action Plan of Trident Academy of Technology has been made on the lines of the National Action Plan for Climate Change with slight modifications.

4. Plan of Action

The plan action comprises 4 goals

(a) Use of renewable source

(b) Energy Efficient use of energy

(c) Green campus

(d) Climate change education

Use of Renewable Source

The Institute has a plan to gradually convert the conventional source of energy into solar energy. Solar panels of 10 Kw have already been installed in the campus. Nearly 50 units of electricity per day and approximately 18,250 units per year are harnessed from these panels. The Institute is committed to enhance the capacity of renewable source of energy. Due to availability of adequate space, institute campus is suitable to install the solar panels. Institute has an energy conservation pledge and a commitment to use 100% renewable energy by 2025 for all existing buildings by generating its own solar power. Trident Academy of Technology has already enhanced its outreach on skill training on solar PV installation and commissioning by providing skill-based training to our faculties. The institute has already installed a 2 kW Solar hybrid system which supplies our campus street lights. The Institute is also planning to install 500 kWp Solar rooftop system by 2025 in its campus.

Energy Efficient Use of Energy

The Institute administration has a deep understanding of energy conservation and responsible consumption. All the electric appliances installed in the buildings and other places of the campus are energy efficient. These appliances include Grundfos pumps for water applications, solar street lights and pumps, use of LED lights in buildings, streets, corridors, etc., IOT based washing machines, variable refrigerant flow technology, etc. The buildings are designed in such a manner that we can harness the advantage of natural light, which in turn save the energy. All the stakeholders of university are well aware of the importance of the energy

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conservation. They fully understand the responsibility of turning off all electrical appliances, bulbs, and machines when the working places are not in use. Also, a central operating system has been developed in the academic buildings so that the air conditioner can be switched off during the off time. Improvement is a gradual and continuous process. Therefore, the University is committed to further improve the existing system in future.

Green Campus:

A total of seventeen United Nations Sustainable Development Goals (SDGs) have been identified by the university, and we are making consistent efforts to accomplish all of them. We are of the opinion that our combined efforts would be significant at the local and regional levels, despite the fact that the goals are presented from a global viewpoint.

Our objectives are driven by the desire to lessen our carbon footprints, decrease our energy consumption, improve our waste management, and make the campus of the university more environmentally friendly.

It is becoming increasingly apparent to us that as the world continues to climb higher on the evolutionary and technological innovation ladder, its relentless pursuit of development begins to deplete the resources that nature has bestowed upon it.

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ENVIRONMENT POLICY FOR A SUSTAINABLE FUTURE

Trident Academy of Technology is committed to the efficient use of resources to conserve the environment in every possible manner. The college has various committees, societies, and clubs, such as the Garden Committee and Eco Club, to manage and ensure a sustainable environment. These committees and clubs organize a wide range of seminars, awareness campaigns, and plantation and cleanliness drives throughout the year with the efforts of students, non-teaching staff, and faculty members.

OBJECTIVE OF THE POLICY

The college is dedicated to promoting environmental consciousness and achieving the goal of sustainable development. We consistently strive to adhere to all environmental regulations outlined for higher educational institutions and implement various government guidelines and campaigns for environmental conservation.

ELEMENTS OF THE POLICY

The environment policy of Trident Academy of Technology constitutes the following elements for achieving different dimensions of sustainable development:

1. Energy conservation.
2. Use of renewable sources of energy.
3. Water conservation and management.
4. Solid waste management.
5. Safe laboratory practices.
6. E-waste management.
7. Reduce, Reuse, and Recycle.
8. Clean and green campus.

ENERGY CONSERVATION

The design of the college building maximizes the use of natural light. All rooms are constructed with wide corridors, large windows, and high ceilings. Apart from ensuring the best possible ventilation throughout different rooms, the college has implemented a wide range of measures for energy conservation, including:

- Ensuring all electrical appliances are switched off when not in use.
- Minimizing water wastage.
- Using energy-efficient appliances like LED bulbs and fans.
- Installing solar panels.

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- Using five-star air conditioners for the most efficient use of energy where required.

USE OF RENEWABLE SOURCES OF ENERGY

The college has installed solar panels and solar cells, which generate electricity for day-to-day usage. Generation of electricity over and above consumption requirements has been provisioned to be exchanged with the authorized electricity operator. We aim to make the entire campus operational through electricity generated by solar panels in the near future. Installation and maintenance of the solar cells and panels are based on a legal agreement.

WATER CONSERVATION AND MANAGEMENT

The college has a functional rainwater harvesting system. The water collected through this system is discharged into the ground to enhance the groundwater level. Regular and thorough inspection of water taps, connecting pipelines, and water tanks is carried out to prevent water wastage. Clean drinking water is facilitated through RO water purifiers with annual maintenance.

SOLID WASTE MANAGEMENT

Dustbins are installed at various locations for the disposal of solid waste. After collection, solid waste is separated into biodegradable and non-biodegradable categories. The college follows guidelines for the disposal and treatment of biological and chemical waste, especially from laboratories. Single-use plastic is strictly prohibited within the college premises. The college also operates a paper recycling unit, which regularly recycles paper for diverse uses. The compost unit of the college makes compost from shed parts of trees.

REDUCE, REUSE, AND RECYCLE

To ensure that biodegradable waste generated within the college premises is used effectively, the college has installed a composting unit. The compost generated is used in plantation activities under the supervision of the Garden Committee. Paper recycling and reuse are carried out to ensure optimum paper use. Biodegradable materials are promoted in line with the prohibition of single-use plastic.

SAFE LABORATORY PRACTICES

The laboratories of various departments undertake safe and green practices in managing laboratory resources and waste. All participants in laboratory activities strictly follow the Standard Operating Procedures (SOP) of Biju Patnaik University of Technology to maintain laboratory safety. The college outlines a list of hazardous chemicals used in laboratory activities and ensures that fire extinguishers installed outside the laboratories are in working condition and

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ready for use in unforeseen situations. Broken glass is separately collected and sent for recycling. The college is dedicated to reducing and minimizing the generation of hazardous waste from laboratory activities.

E-WASTE MANAGEMENT

The college ensures periodic disposal of electronic and electrical equipment that is no longer suitable for use, following disposal guidelines diligently. All departments and sections make a list of electronic and electrical equipment to be disposed of, along with procurement and disposal reasons. After physically verifying such waste items, the college seeks permission from Biju Patnaik University of Technology for verification. Upon receiving a clearance certificate from the University, the college places the list before the Governing Body. Upon approval, a public notice initiates an auction process, inviting participation from government-authorized e-waste firms. A specialized store room is present for storage before disposal, supervised by the college caretaker.

CLEAN AND GREEN CAMPUS

A clean and green campus safeguards the health of all members within the college premises. The college organizes regular plantation drives and maintains ongoing plantation activities. A group of skilled gardeners, under the initiatives of the Garden Committee, ensures the campus is covered with adequate greenery. Attention is given to planting ornamental and medicinal plants that help enhance oxygen levels and rejuvenate soil health. A herbal garden has also been set up in the college. A green audit is conducted to assess, quantify, prioritize, and formulate a framework in accordance with all applicable regulations and standards. The college focuses on the minimal use of non-biodegradable substances. Skilled staff take care of daily cleaning activities and waste disposal in every campus area. Special cleanliness drives are organized under various programs by different committees and departments.

FUTURE PLAN

Trident Academy of Technology diligently strives to achieve sustainable development through its environmental policy. Several faculty members are engaged in workshops, courses, and research endeavors related to the environment. We aim to utilize their knowledge and skills to conduct regular workshops, awareness campaigns, and on-ground activities, enabling the college to achieve holistic results as per its policy. The following aspects are considered for the near future:

1. Making the campus entirely functional through electricity generated by solar panels.
2. Installing LED lights and fans along with the most efficient electrical appliances throughout the college.

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3. Expanding the rainwater harvesting unit for more water discharge and recycling.
4. Installing a centralized water purifier system with several local units at various campus locations.
5. Promoting bicycle usage by collaborating with service providers.
6. Expanding the composting system by engaging with appropriate developers.
7. Conducting localized plantation drives to introduce new species and maintain existing ones for a diverse range of plants.
8. Installing a more advanced waste disposal mechanism.
9. Introducing a centralized norm for cleanliness while conducting events within the college premises.
10. Enhancing laboratory infrastructure to promote more efficient waste management generated from daily activities.

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Certification & Inspection

Certificate of Registration

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Occupational Health and Safety Management System
of

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TRIDENT ACADEMY OF TECHNOLOGY

at

PLOT NO. F2/A, CHANDAKA INDUSTRIAL ESTATE, CHANDRASEKHARPUR, BHUBANESWAR, 751024, ODISHA, INDIA

Principal
Trident Academy of Technology
Bhubaneswar-751024

has been independently assessed and is
compliant with the requirements of:

ISO 45001:2018

For the following scope of activities:

ALL ELECTRICAL TESTING ACTIVITIES (INCLUDING CONDUCTORS & CONDUCTING MATERIALS, ELECTRICAL INDICATING & RECORDING INSTRUMENTS, ENERGY EFFICIENCY OF COMMERCIAL / INDUSTRIAL APPLIANCES, ENERGY EFFICIENCY OF DOMESTIC ELECTRICAL APPLIANCES, ENVIRONMENTAL TEST FACILITY, SAFETY TESTING FACILITY, SWITCHGEAR & PROTECTIVE EQUIPMENT), **ALL MECHANICAL TESTING ACTIVITIES** (INCLUDING HEATING VENTILATING AND AIR CONDITIONING (HVAC), SOLAR PANEL), **ALL ELECTRONICS TESTING ACTIVITIES** (INCLUDING EMC TEST FACILITY, ENERGY EFFICIENCY OF DOMESTIC ELECTRONIC APPLIANCES, ENVIRONMENTAL TEST FACILITY, SAFETY TESTING FACILITY, TELECOMMUNICATION EQUIPMENT), **ALL CHEMICAL TESTING ACTIVITIES** (INCLUDING AYUSH PRODUCTS, BIO-STIMULANT, BUILDING MATERIAL, FERTILISER, FIRE FIGHTING EQUIPMENTS & ACCESSORIES, FOOD & AGRICULTURAL PRODUCTS, AIR QUALITY MONITORING INCLUDING GASES, INDUSTRIAL & FINE CHEMICALS, NUTRACEUTICALS & FUNCTIONAL FOODS, NUTRITIONAL SUPPLEMENTS, ORES & MINERALS, PESTICIDE FORMULATIONS, PLASTIC & RESINS, POLLUTION & ENVIRONMENT, RESIDUES IN WATER, SOIL, SOIL AND ROCK, WATER, **ALL BIOLOGICAL TESTING ACTIVITIES**. (INCLUDING ANTIMICROBIAL ACTIVITY PRODUCTS, AYUSH PRODUCTS, BIOLOGICAL MONITORING, BIOLOGICAL TESTS ON OTHER MISCELLANEOUS TEST ITEMS, BIOPESTICIDES AND BIOFERTILIZERS, ENVIRONMENT AND POLLUTION, NUTRITIONAL SUPPLEMENTS, RESIDUE ANALYSIS, WATER QUALITY PHYSICAL , BIOLOGICAL AND CHEMICAL PROPERTIES AND POLLUTANT ORGANIC AND INORGANIC MATERIALS)

Certificate Number: UQ-2018082819

Validity of this certificate can be verified at www.ukcertifications.org.uk/verify

Date of Certification	26th August 2019
1st Surveillance Audit Due	25th August 2020
2nd Surveillance Audit Due	25th August 2021
Certificate Expiry	25th August 2022

Authorised Signatory

UKAF

UK Certification & Inspection Ltd.

QRO
QUALITY RESEARCH ORGANIZATION

Certificate of Registration

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TRIDENT ACADEMY OF TECHNOLOGY

PLOT NO. F2/A, CHANDAKA INDUSTRIAL ESTATE,
CHANDRASEKHARPUR, BHUBANESWAR, 751024, ODISHA, INDIA

has been independently assessed by QRO

and is compliant with the requirement of:

ISO 9001:2015

Quality Management System

For the following scope of activities:

ELECTRICAL AND ELECTRONICS ENGINEERING, ELECTRONICS AND TECECOMMUNICATIONS ENGINEERING, COMPUTER SCIENCE AND ENGINEERING, MBA, MECHANICAL ENGINEERING, MASTERS IN COMPUTER APPLICATIONS, ELECTRICAL ENGINEERING, ELECTRONICS AND TELECOMMUNICATIONS ENGINEERING, COMPUTER SCIENCE AND ENGINEERING, CIVIL ENGINEERING, BIOTECHNOLOGY, COMPUTER SCIENCE TECHNOLOGY, COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING), COMPUTER SCIENCE AND INFORMATION TECHNOLOGY, INFORMATION TECHNOLOGY

Date of Certification: 12th March 2020.
1st Surveillance Audit Due: 11th March 2021
2nd Surveillance Audit Due: 11th March 2022
Certificate Expiry: 11th March 2023

Certificate Number: 3020180219842Q

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has been independently assessed and is
compliant with the requirements of:

ISO/IEC 17025:2017

For the following scope of activities:

ALL ELECTRICAL TESTING ACTIVITIES (INCLUDING CONDUCTORS & CONDUCTING MATERIALS, ELECTRICAL INDICATING & RECORDING INSTRUMENTS, ENERGY EFFICIENCY OF COMMERCIAL / INDUSTRIAL APPLIANCES, ENERGY EFFICIENCY OF DOMESTIC ELECTRICAL APPLIANCES, ENVIRONMENTAL TEST FACILITY, SAFETY TESTING FACILITY, SWITCHGEAR & PROTECTIVE EQUIPMENT), **ALL MECHANICAL TESTING ACTIVITIES** (INCLUDING HEATING VENTILATING AND AIR CONDITIONING (HVAC), SOLAR PANEL), **ALL ELECTRONICS TESTING ACTIVITIES** (INCLUDING EMC TEST FACILITY, ENERGY EFFICIENCY OF DOMESTIC ELECTRONIC APPLIANCES, ENVIRONMENTAL TEST FACILITY, SAFETY TESTING FACILITY, TELECOMMUNICATION EQUIPMENT), **ALL CHEMICAL TESTING ACTIVITIES** (INCLUDING AYUSH PRODUCTS, BIO-STIMULANT, BUILDING MATERIAL, FERTILISER, FIRE FIGHTING EQUIPMENTS & ACCESSORIES, FOOD & AGRICULTURAL PRODUCTS, AIR QUALITY MONITORING INCLUDING GASES, INDUSTRIAL & FINE CHEMICALS, NUTRACEUTICALS & FUNCTIONAL FOODS, NUTRITIONAL SUPPLEMENTS, ORES & MINERALS, PESTICIDE FORMULATIONS, PLASTIC & RESINS, POLLUTION & ENVIRONMENT, RESIDUES IN WATER, SOIL, SOIL AND ROCK, WATER, **ALL BIOLOGICAL TESTING ACTIVITIES.** (INCLUDING ANTIMICROBIAL ACTIVITY PRODUCTS, AYUSH PRODUCTS, BIOLOGICAL MONITORING, BIOLOGICAL TESTS ON OTHER MISCELLANEOUS TEST ITEMS, BIOPESTICIDES AND BIOFERTILIZERS, ENVIRONMENT AND POLLUTION, NUTRITIONAL SUPPLEMENTS, RESIDUE ANALYSIS, WATER QUALITY PHYSICAL , BIOLOGICAL AND CHEMICAL PROPERTIES AND POLLUTANT ORGANIC AND INORGANIC MATERIALS)

Certificate Number: UQ-2018084828

Validity of this certificate can be verified at www.ukcertifications.org.uk/verify

Date of Certification	26th August 2019
1st Surveillance Audit Due	25th August 2020
2nd Surveillance Audit Due	25th August 2021
Certificate Expiry	25th August 2022

Authorised Signatory

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UK Certification & Inspection Ltd.

AUDIT CERTIFICATE

EHS alliance

CERTIFICATE

PRESENTED TO

TRIDENT ACADEMY OF TECHNOLOGY

F-2, Chandaka Industrial Estate In front of Infocity, Infocity
Chandrasekharpur, Bhubaneshwar Odisha - 751024

Has been assessed by EHS Alliance Services for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

ENVIRONMENT AUDIT

ACADEMIC YEAR 2022-23

The environment legal compliances and initiatives carried out by the institution have been verified on the report submitted and were found to be satisfactory.

The efforts taken by management and faculty towards environment and sustainability are highly appreciated and noteworthy.

ATTESTED

SIGNATURE

EHS ALLIANCE SERVICES GURGAON

11.05-2023
DATE OF AUDIT

Trident Academy of Technology
Bhubaneswar-751024

CERTIFICATE

EHS alliance

CERTIFICATE

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F-2, Chandaka Industrial Estate In front of Infocity, Infocity
Chandrasekharpur, Bhubaneshwar Odisha - 751024

That has been assessed by EHS Alliance Services for the comprehensive study of Energy Audit on institutional working framework to fulfill the requirement of

ENERGY AUDIT

ACADEMIC YEAR 2022-23

The energy saving initiatives carried out by the institution have been verified in the report submitted and were found to be satisfactory.

The efforts taken by management and faculty towards all types of energy used in the institution and sustainability are highly appreciable and noteworthy.

SIGNATURE

EHS ALLIANCE SERVICES GURGAON

ATTESTED

11.05.2023
DATE OF AUDIT

EHS ALLIANCE SERVICES, PLOT A-72, SURYA VIHAR, GURUGRAM, 122001
WWW.EHSALL.IN | BUSINESS@EHSALL.IN | EHSALLIANCE@GMAIL.COM

Principal
Trident Academy of Technology
Bhubaneswar-751024

TRIDENT ACADEMY OF TECHNOLOGY

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F-2, Chandaka Industrial Estate In front of Infocity, Infocity
Chandrasekharpur, Bhubaneshwar Odisha - 751024

Has been assessed by EHS Alliance Services for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

GREEN AUDIT

ACADEMIC YEAR 2022-23

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

ATTESTED

SIGNATURE

EHS ALLIANCE SERVICES • GURGAON

11.05.2023
DATE OF AUDIT

EHS ALLIANCE SERVICES, PLOT A-72, SURYA VIHAR, GURUGRAM, 122001
WWW.EHSALL.IN | BUSINESS@EHSALL.IN | EHSALLIANCE@GMAIL.COM

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Trident Academy of Technology
Bhubaneswar-751024

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GREEN AUDIT REPORT

2022-2023

PREPARED BY
EHS ALLIANCE SERVICES

CONTENT

CERTIFICATE

EHS alliance

CERTIFICATE

PRESENTED TO

TRIDENT ACADEMY OF TECHNOLOGY

F-2, Chandaka Industrial Estate In front of Infocity, Infocity
Chandrasekharpur, Bhubaneshwar Odisha - 751024

Has been assessed by EHS Alliance Services for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

GREEN AUDIT

ACADEMIC YEAR 2022-23

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

EHS ALLIANCE SERVICES GURGAON

SIGNATURE

11.05.2023
DATE OF AUDIT

EHS ALLIANCE SERVICES, PLOT A-72, SURYA VIHAR, GURUGRAM, 122001
WWW.EHSALL.IN | BUSINESS@EHSALL.IN | EHSALLIANCE@GMAIL.COM

ACKNOWLEDGEMENT

EHS Alliance Services would like to thank the management of Trident Academy Of Technology, Bhubaneshwar, Odisha for assigning this important work of Green Audit. We appreciate the co-operation to the teams for completion of assessment.

First of all, we would like to thank **Dr. Deba Narayan Pattanayak - Principal, Trident Academy Of Technology** for giving us an opportunity to evaluate the green performance of the campus.

We would also like to thank ***Prof. (Dr.) Amarendra Baral - Dean, Science and Humanities, Audit Co-ordinator***, for his continuous support and guidance, without which the completion of the project would not have been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

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It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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Signature

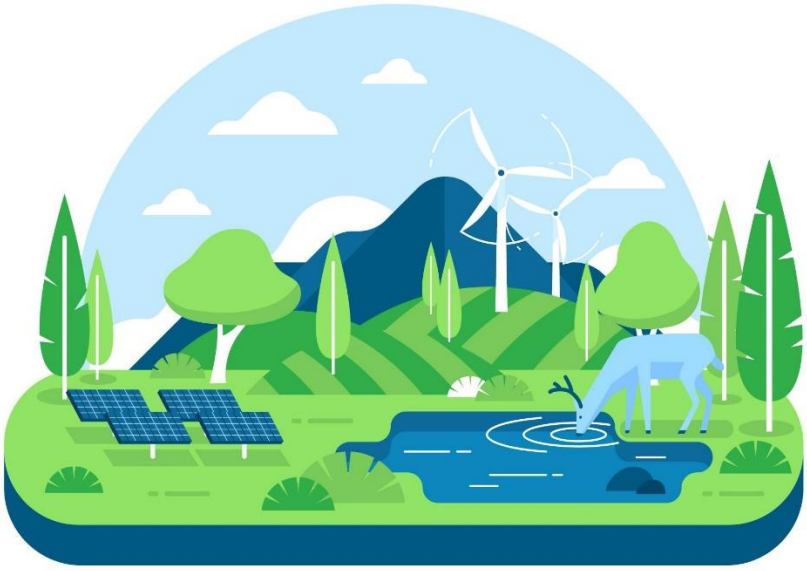
LEAD AUDITOR

CONCEPT AND CONTEXT

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019–20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation. 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.

In view of the NAAC circular regarding Green auditing, the College management decided to conduct an external environment assessment study by a competent external professional auditor. The green audit aims to examine environmental practices within and outside the campus, which impact directly or indirectly on the atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of college environment. It was initiated with the intention of reviewing the efforts within the institutions whose exercises can cause risk to the health of inhabitants and the environment.

Through the green audit, a direction as how to improve the structure of environment and inclusion of several factors that can protect the environment can be commenced. This audit focuses on the Green Campus, Waste Management, Water Management, Air Pollution, Energy Management & Carbon Footprint etc. being implemented by the institution.



INTRODUCTION

Now days, the educational institutions are becoming more thoughtful towards the environmental aspects and as a result new and innovative concepts are being introduced to make them sustainable and eco-friendly. To preserve the environment within the institution, a number of viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the saving the energy, waste recycle, water consumption reduction, water harvesting and many more...

The activities carried out by the institution can also create adverse environmental impacts. Green audit is defined as an official inspection of the effects a College has on the environment. Green Audit is conducted to evaluate the actual scenario at the institution campus. Green audit can be a useful tool for a College to determine how and where they are using the most of the energy or water or resources; the College can then decide how to implement changes and make savings. It can also be used to determine the nature and volume of waste, which can be used for a recycling project or to improve waste minimization plan.

Green auditing and the application of mitigation measures is a win-win situation for all the institutions, the learners and the mother earth. It can also result in health awareness and can promote the environmental awareness, values and beliefs. It provides a better understanding to staff and students about the Green impact on institution. Green auditing also upholds financial savings through reduction of resource usage. It gives an opportunity to the students and teachers for the development of ownership of the personal and social responsibility. The audit process involves primary data collection, site walk through with the team of college including the assessment of policies, activities, documents and records.

OVERVIEW OF THE COLLEGE

Trident Academy of Technology, a name that has become a brand in the field of technical education, is today synonymous with excellence. Trident is where Education meets Enthusiasm. Within just a few years of its establishment, Trident group of institutions has built an image amongst the aspiring masses which is worth the quality of education it imparts.

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Undisputed leadership in sustained development of skilled human resources from Eastern India through excellence in educational practices.

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FACILITIES AT THE CAMPUS

LIBRARY

The college has a central library with all modern facilities. The library has 60000 book volumes, 274 e-journals, 275 science direct and 25 IEEE articles. The library also provides e-learning facility, digital library, reading room and reference section. All the library operations have been computerized. Computerized Library Management includes search, indexing, issue/return records. Bar-coding of records are common and all book volumes are managed through bar-code readers.

COMPUTER LAB

TAT has spacious, air conditioned and centrally controlled and monitored Computer Laboratories. Well equipped and operational systems with current edition of antivirus, licensed software and latest configuration of hardware are made available to the students for their convenience in adapting to modern technology.

TRANSPORT

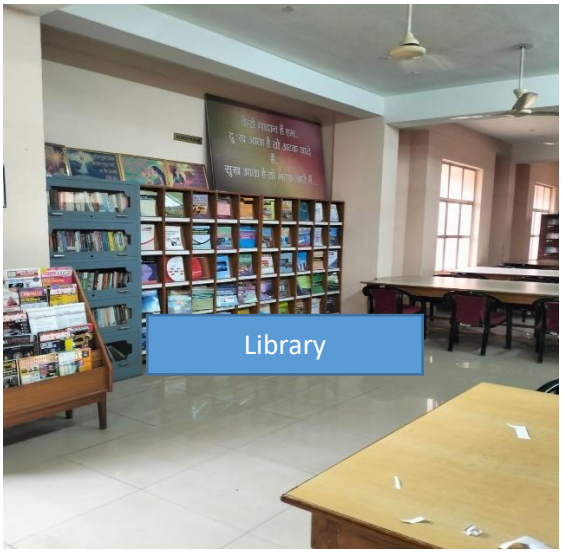
The college has outsourced the transport facility, A dedicated fleet of buses has been provided by the operator and these buses ply in five different routes picking up students from designated bus stops across the city. The present arrangement of routes can be viewed by clicking here.

HOSTEL

The college has three in-campus hostels with capacity of 1200 inmates. The rooms are spacious, well-furnished and duly maintained. Mess facility is provided for students. Hygienic vegetarian and non-vegetarian foods are provided to the students at a nominal rate. Incoming telephone facility is provided for the hostel.

CANTEEN

The centralized food court of Trident Group of Institutions providing round-the-clock breakfast, lunch and other refreshments and dinner. Separate canteen and cafeteria facilities are available for TAT and TACT. Whereas the TAT canteen serves South Indian Snacks and breakfast along with Oriya style lunch, the cafeteria provides dry snacks.



Geo Location
Geo Coordinates from Google maps:
20.3399164, 85.8085694

AUDIT PARTICIPANTS

On behalf of college

Participant Name	Designation/ Role
Dr. Deba Narayan Pattanayak	Principal
Prof. (Dr.) Amarendra Baral	Dean, Science and Humanities

On behalf of EHS Alliance Services

Name	Position	Qualifications
Dr. Uday Pratap	Lead Auditor	*Ph.D. , PDIS, QCI – WASH, Lead Auditor ISO 14001:2015*
Ms. Pooja Kaushik	Co-Auditor	*M. Sc., Field Expert, QCI – WASH*

EXECUTIVE SUMMARY

Green auditing is an essential step to identify and determine whether the institutions practices are sustainable and ecological. Traditionally, we were upright and efficient users of natural resources. But over the period of time, excessive usage of resources like water, electricity, petrol, etc. have become habitual for everyone especially, in urban and semi-urban areas. It is actually the right time to check if we (our process) are consuming more than required resources? Whether we are using resources sensibly?

Green audit standardizes all such practices and provides an efficient way to use natural resources. In the time of climate change and resource exhaustion it is necessary to re-check the processes and convert it in to green and sustainable. Green audit provides an approach for it. It also increases overall awareness among the folks working in institution towards the eco-friendly environment.

This is the first attempt to conduct green audit of this College campus for fulfilment of NAAC criteria. This audit was mainly focused on greening indicators like consumption of energy in terms of electricity and fossil fuel, quality of soil, water usage, vegetation, waste management practices and carbon foot print of the campus. Initially a questionnaire was shared to know about the existing resources of the campus and resource consumption pattern of the students and staffs in the College.

GREEN AUDIT – ANALYSIS

1.1 GENERAL INFORMATION

1. Does any Green Audit conducted earlier?

Yes, This is first time a systematic way of monitoring their environmental eminence initiative taken by College for environment protection.

2. What is the total strength (people count) of the Institute?

Students
Male: 1715 Female: 748 Total: 2463
Teachers
Male: 114 Female: 41 Total: 155
Non-Teaching Staff
Male: 57 Female: 10 Total: 67
Total Strength
Male: 1886 Female: 799 Total: 2685

3. What is the total number of working days of your campus in a year?

There are two hundred sixty five (265) working days in a year.

4. Where is the campus located?

The campus is located at F-2, Chandaka Industrial Estate, In front of Infocity, Chandrasekhar, Bhubaneshwar, Odisha - 751024

5. Which of the following are available in your institute?

Garden area	*Available*
Playground	*Available*
Kitchen	*Available*
Toilets	*Available*
Garbage Or Waste Store Yard	*Available*
Laboratory	*Available*
Canteen	*Available*
Hostel Facility	*Available*
Guest House	*Available*

6. Which of the following are found near your institute?

Municipal dump yard	*Not in vicinity of institute*
Garbage heap	*No Garbage heaps*
Public convenience	*Public convenience is available*
Sewer line	*2.0 KM sewer line within campus*
Stagnant water	*No stagnant water*
Open drainage	*No*
Industry – (Mention the type)	*No*
Bus / Railway station	*Infocity Bus Stop, Bhubaneswar Railway Station , Biju Patnaik International Airport, Bhubaneswar*
Market / Shopping complex	*Yes*

1.2 WASTE MINIMIZATION AND RECYCLING

1. Does your institute generate any waste? If so, what are they?

Yes, Solid waste, Canteen waste, paper, plastic, horticulture, laboratory waste, e-waste, etc.

2. What is the approximate amount of waste generated per day? (in Kg) (approx.)

Biodegradable waste - 30 Kg
Non-biodegradable waste – 5 Kg
Hazardous Waste – 1 Kg
Other waste –1 Kg
BMW waste – 2 Kg

3. How is the waste generated in the institute managed? By Composting, Recycling, Reusing, Others (specify)

- *College avoid use of single use plastic on the campus*
- *One side printed Paper is re-used for internal communication.*
- *Under SDG 6, college is introducing circular economy models for daily kitchen waste, water discharge from sewage treatment plant*
- *Mechanism for roof-top and field level water harvest and recharge of the four ground water*

4. Do you use recycled paper in the institute?

No

5. How would you spread the message of recycling to others in the community?

- *Seminars and webinars*
- *Reuse waste paper for poster-making*
- *Waste plastic containers are being used as planters*
- *Nearby village adoption for environment-related works*
- *Nukkar-Natak by Students to increase awareness*

6. Can you achieve zero garbage in your institute? If yes, how?

Not yet achieved. Possible through waste management policy and planning.

1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes, about 129167 Sq ft areas are developed as Gardens.

2. Do students spend time in the garden?

Yes, students spend around 2-4 Hours during winter.

3. Total number of Plants in Campus?

Plant type with approx. count	
Full-grown Trees	*64*
Small Trees	*672*
Hedge Plants	*2610*
Grass Cover	*129167 SQ FT*

4. Is the College campus having a Horticulture Department? (If yes, give details)

Yes, Total 12 staff deployed in horticulture

5. How many Tree Plantation Drives organized by campus per annum?

Annually, around 4 times Tree Plantation Drives are Organized by campus. Total 50 trees and hedge plants planted in each drive with more than 60% survival rate.

6. Is there any Plant Distribution Program for Students and Community?

Yes, Saplings are distributed to Students and visitors at various Occasions on various events.

8. Is there any Plant Ownership Program?

No

1.4 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:
***Drinking** – 77.52 KL/ month*
***Gardening** – 216.00 Kl/ month*
***Kitchen and Toilets** – 509.88 KL/ month*
***Others** – 224.40 KL/ month*
***Hostel** – 3094.20 KL/ Month*
***Total** = 4122.01 KL/ Month*

2. How does your institute store water? Are there any water saving techniques followed in your institute?

College stores water in terrace tanks
SAVING TECHNIQUES
1. All the pipes are closed when not in use
2. Sensor is installed at the tank to avoid overflow of the water once the tank is full.
3. Water purifier cum cooler machine is installed.
4. Sensitizing students and staffs about importance of saving water

3. Locate the point of entry of water and point of exit of waste water in your institute.

***Entry** - Water comes from borewells.*
***Exit**- From Canteen, Toilets, labs, bathrooms by covered drainage which is connected to STP 100 KLD).*

4. Write down ways that could reduce the amount of water used in your institute

Basic ways:
1. *Close the taps after usage*
2. *Maintenance and monitoring of valves in the supply system to avoid overflow, leakage and spillage*

1.5 ANIMAL WELFARE

1. List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

Approx. 10 Birds, 2-3 Dogs, 1-2 Cats and around 10 Squirrels are found in campus. A variety of bird's species and other flora and fauna are available, so institute doing their bit for its conservation.

2. Does your institute have a Biodiversity Program or a KARUNA CLUB?

No

1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year CO2 emission from electricity

(electricity used per year in kWh/1000) x 0.84
62853 kWh/1000 x 0.84
=62853 /1000x0.84
= 52.80 tons

2. Transportation per year (Bus) CO2 emission from transportation

There are total 15 buses on campus
*=(15*2*2*265/100)*0.01*
=1.59 tons

3. Transportation per year (car) CO2 emission from transportation

There are 7 college owned cars
*=7*4*2*265/100*0.02*
=2.97 tons

3. CO2 emission from LPG/ PNG (Cooking)

(LPG used per year in kgs /1000) x 0.84
28500 kg/1000 x 2.99
=76.38 tons

3. CO2 emission from Diesel Generators

(Diesel used per year in Liters /1000) x 2.68
=1500 Liters /1000 x 2.68
=4.49 tons

Total CO2 emission per year cumulative by electricity usage + bus transportation + car transportation + Cooking + DG Sets is 138.22 tons

Carbon absorption by flora in the institution

There are 64 full grown trees and 672 semi grown trees of different species, on the campus spread over 129167 sq ft.
Carbon absorption capacity of one full grown tree 22 kg CO2 Therefore Carbon absorption capacity of 64 full-grown trees 64 x 22 kg CO2 =1.41 tons of CO2.

The carbon absorption capacity of 672 semi-grown trees is approx. 30% of that of full-grown trees. Hence the carbon absorption 672 x 6.8 kg of CO2 = 4.57 tons of CO2

There are approximately Hedge Plants 2610 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO2 where as some others absorb very low level of CO2. In the absence of a detailed scientific study, 200g of CO, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, total carbon absorption of bushes is 2610 x 200 g = 0.52 tons of CO2

The lawns on the campus have buffalo grass, Mexican grass and indigenous grass species and cover a total area of 129167 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area 129167 x 365 x 0.1 g CO2 = 4.71 kg CO2 per year.

Grand total of carbon absorption capacity of the campus is 11.21 tons.

Transparency of Green Audit Report

Green audit report is one of the useful means of demonstrating an organization's commitment to openness and transparency. If an Organisation believes it has nothing to hide from its stakeholders, then it should feel confident enough to make its green audit reports freely available to those who request them. As a basic rule, green audit reports should be made available to all stakeholders.

GREEN INITIATIVES BY CAMPUS

- **Renewable Energy** - A solar power plant of capacity 12 KW is installed on the building roof that will supply approx. 20% of total power requirements in campus.
- **Tree Plantation Drives** – Four plantation Drives Annually.
- **Air Pollution Reduction** - Personal Vehicles (Students) not allowed at campus
- **Solid Waste Management** – Waste management by segregation of waste, recycling, and selling of paper, plastic, milk packets, etc. to recyclers. There is a ban on single-use plastic and plastic crockery in campus.
- Webinars and Seminars on environmental issues.
- E-Abhiyan for nearby schools for education and awareness
- **Eco club Initiatives**
    - Van-Mahotsav Conducted for three days

RECOMMENDATIONS

- Eco-friendly parameters should be included in the purchase of articles and goods for the College campus.
- Water Meter should be installed at every building of institute for monitoring of water consumption per capita.
- College should display environment-conscious poster/paintings/slogans in the building for spreading awareness amongst students.
- 'Save Energy' Messages should be displayed at various locations to aware the students and staff about energy Savings.
- Plant ownership programs should be started with students to create awareness and responsibility towards environment.
- Enhance recycling - This can be done by creating a group where students can recycle books, personal clothes and other material to needy students. This can be an initiative under green program.
- Sensor-based lighting systems should be installed for common areas like library, corridor, mess, stairs, washrooms, etc.
- College should start the use of Sprinklers gardening purpose
- Increase plantation drives in nearby villages, local bodies, NGO and Municipal Corporation in order to balance the carbon emission and absorption.
- Arrange training programs on environmental management system and nature conservation for schools and local people.

CONCLUSION

This audit involved extensive consultation with all the campus team, interactions with key personnel on wide range of issues related to Environmental aspects. Trident Academy Of Technology has for YRC (Youth Red Cross) sustainable use of resources. Overall 30 % area of College campus is for landscaping. The audit has identified several observations for making the campus premise more environmentally friendly. The recommendations are mentioned with observations for College campus team to initiate actions.

REFERENCE:

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle
- Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control Of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Air [Prevention & Control Of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices

ANNEXURE I – PHOTOGRAPHS OF ENVIRONMENT CONSCIOUSNESS

Well ventilated building structure

Well maintained College campus

Auditorium

Hostel building

Color coded dustbin

Push taps to save water

Class rooms

Uninals to save water

Plantation drive

Green campus

Well equiped Computer lab

Spacious library

Swatchhta abhiyaan activity

Awareness campaign

World Water Day

Awareness program

******** END OF THE REPORT ********

TRIDENT
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ENERGY AUDIT REPORT

2022-2023

PREPARED BY
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Vijay Singh
Lead Auditor EMS & Energy

Dr. Uday Pratap
Co-Auditor EMS & Energy

ABBREVIATION

A	**Amps**
AC	**Air Conditioner**
AC	**Alternating Current**
AMET	**Academy of Maritime Education and Training**
CFL	**Compact fluorescent lamp**
CIP	**Comprehensive Inspection Program**
DC	**Direct Current**
HSD	**High-Speed Diesel**
Hz	**Hertz**
kg	**Kilogram**
kVA	**kilo-volt-ampere**
kW	**kilo Watts**
kWh	**kilowatt hour**
kWp	**Kilowatt peak**
LED	**Light Emitting Diode**
LPG	**Liquefied Petroleum Gas**
MMS	**Module mounting structure**
MPPT	**Maximum Power Point Tracker**
NAAC	**The National Assessment and Accreditation Council**
SEC	**Specific Energy Consumption**
SPV	**Solar Photovoltaic**
STC	**Standard Test Condition**
TV	**Television**
V	**Volts**
W	**Watts**
W/m2	**watt per square metre**

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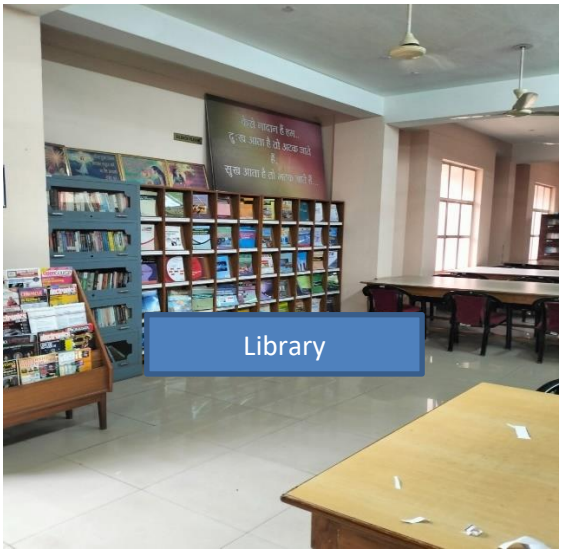
CANTEEN

The centralized food court of Trident Group of Institutions providing round-the-clock breakfast, lunch and other refreshments and dinner. Separate canteen and cafeteria facilities are available for TAT and TACT. Whereas the TAT canteen serves South Indian Snacks and breakfast along with Oriya style lunch, the cafeteria provides dry snacks.



Geo Location
Geo Coordinates from Google maps:
20.3399164, 85.8085694

AUDIT PARTICIPANTS

On behalf of College

Participant Name	Designation/ Role
Dr. Deba Narayan Pattanayak	Principal
Prof. (Dr.) Amarendra Baral	Dean, Science and Humanities

On behalf of EHS Alliance Services

Name	Position	Qualifications
Mr. Vijay Singh	Lead Auditor	M.Sc. M. Tech (Environment Science & Engineering) Energy Auditor, Post Diploma in Industrial Safety Management
Dr. Uday Pratap	Co-Auditor	Ph.D., EMS: Lead Auditor ISO14001:2015, QCI–WAS

EXECUTIVE SUMMARY

The purpose of this Energy Audit was to seek opportunities to improve the energy efficiency of the Trident Academy Of Technology. Reducing the energy consumption despite improving the human comfort, health and safety were of primary concern.

Beyond just identifying the energy consumption pattern, this audit sought to detect and categorize the most energy efficient appliances. Additionally, some daily practices relating common appliances have been shared which may help reducing the energy consumption. Data collection for energy audit of the College was carried out by the EHS Alliance Team. The Energy Audit Report accounts for the energy consumption patterns of the College on actual survey and detailed analysis during the audit.

The work comprehends the area wise consumption traced using suitable equipment. The analysis was carried out by our team with the support of the staff members from Trident Academy Of Technology. The report provides a list of possible actions to preserve and efficiently access the available source, resources and their saving potential was also identified. We look forward towards optimization that the authorities, students and staff members would follow the recommendations in the best possible way. The report is based on certain generalizations including the approximations wherever necessary. The views conveyed may not reveal the general opinion. They merely represent the opinion of the team guided by the interviews of clients. We are happy to submit this Energy audit report to the Trident Academy Of Technology.

ENERGY AUDIT ANALYSIS

1. ENERGY CONSUMPTION

To understand the Energy Consumption trends and for analyzing the average monthly consumption we have collected electricity energy bills from July 2022 to Jun 2023.

The details of **"Meter Connection"** at **"TRIDENT ACADEMY OF TECHNOLOGY"** are as follows-

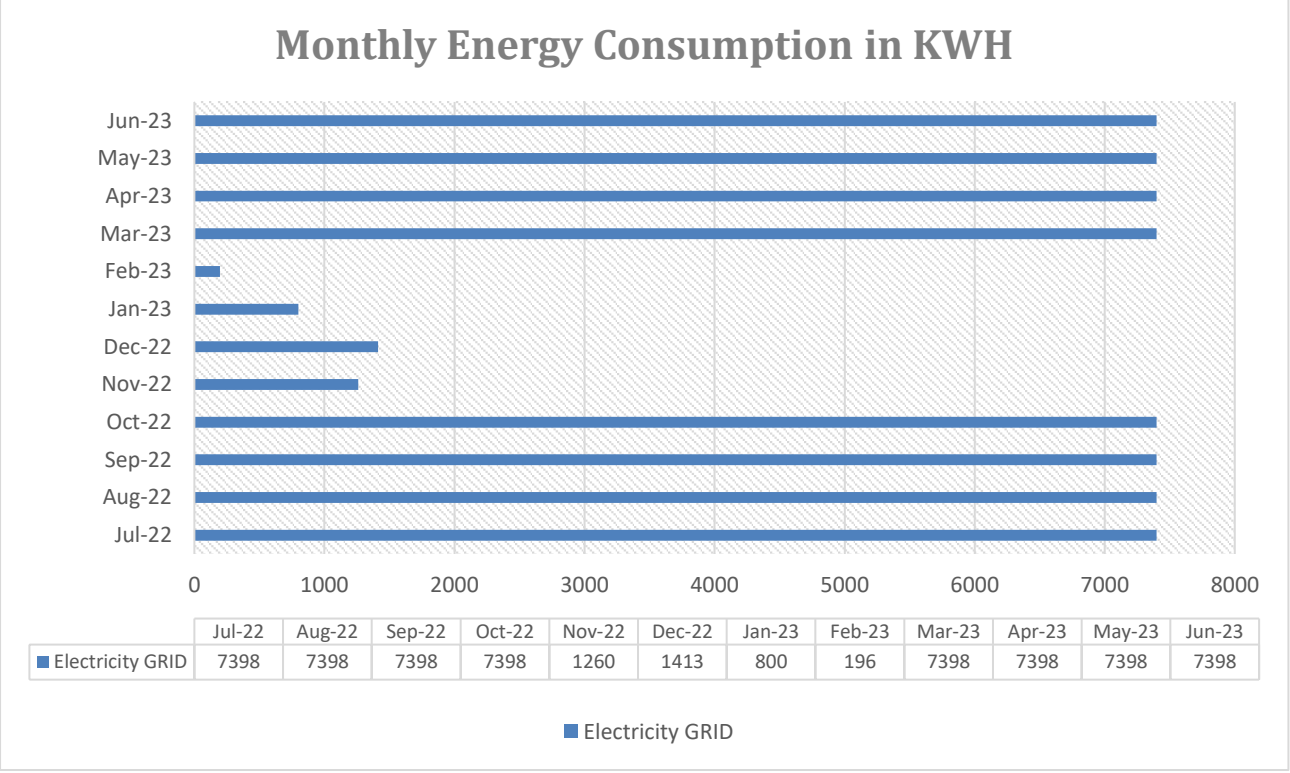
Name	-	Dinabandhu Foundation
Consumer Id:	-	80000033573

1.1 Summary of Monthly Electricity Consumption and Total Bill Amount

To understand the Energy consumption trend and for developing the baseline parameter we have collected monthly energy bill for the 12 months i.e. from July 2022 to Jun 2023.

Month	Grid Units	Amount	Solar Units	Net Metering Units	Amount
Jul-22	7398	6.2	1,440	7398	45868
Aug-22	7398	6.2	1,440	7398	45868
Sep-22	7398	6.2	1,440	7398	45868
Oct-22	7398	6.2	1,440	7398	45868
Nov-22	1260	6.2	1,440	1260	7812
Dec-22	1413	6.2	1,440	1413	8761
Jan-23	800	6.2	1,440	800	4960
Feb-23	196	6.2	1,440	196	1215
Mar-23	7398	6.2	1,440	7398	45868
Apr-23	7398	6.2	1,440	7398	45868
May-23	7398	6.2	1,440	7398	45868
Jun-23	7398	6.2	1,440	7398	45868
SUM	**62853**		**17280**	**62853**	**389689**

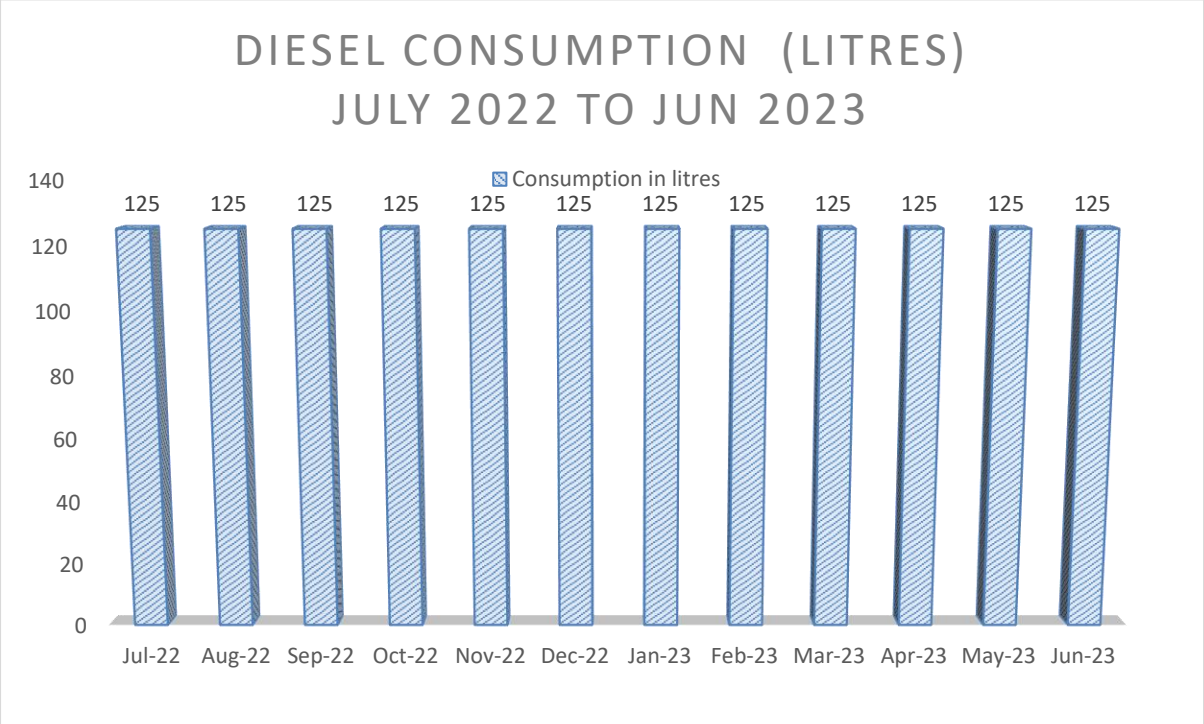
Monthly grid electricity consumption is based on the information provided by the college.



2. DIESEL CONSUMPTION

Below is the diesel consumption details in liters from July 2022 to Jun 2023.

Month wise Diesel Consumption July 2022 to Jun 2023	
Period	**Diesel Consumption (Litres)**
Jul-22	125
Aug-22	125
Sep-22	125
Oct-22	125
Nov-22	125
Dec-22	125
Jan-23	125
Feb-23	125
Mar-23	125
Apr-23	125
May-23	125
Jun-23	125
Total	**1500**



The college has no records for diesel purchases and has provided monthly average consumption details

3. ANALYSIS OF DG SETS

In the College, there is one Diesel Generator (DG) sets for its electrical power needs in case of Grid power failure. Total installed DG sets capacity is 250 kVA.

Description	Unit	DG Station -1	DG Station -2
Design details:		Kirloskar Green	
Rated capacity	kVA	125	125
Hz		50	50
Sl No.		08.20/20-21/0272	08.20/20-21/0273
Make		Koel Green	Koel Green
Volts	Volts	415	415
PF		0.8	0.8
Phase		3	3
RPM		1500	1500
Amps	Amps	174	174
Mfg.		August2020	August2020

Description	Unit	DG at Station 1
Operational details:		
Operating hours during testing	Hours	0.50
% Loading	%	69.75
Energy Generation	kWh	38.35
Load	KVA	85.6
Fuel consumption during testing	Litre	9
Specific energy generation	kWh/litre	3.21

Observation and Suggestions:- As per the trial taken during the energy audit the percentage loading of DG set is 69.75% which is ok and specific energy consumption of DG Sets 3.21 KWH/Litre which is satisfactory because as per manufacturer recommendation, best practices for SEC in DG sets range from 3.0 to 3.5 kWh/litre and above.

4. AC SYSTEM

Energy Efficiency Ratio (EER): Performance of smaller chillers and rooftop units is frequently measured in EER rather than kW/ton. EER is calculated by dividing a chiller's cooling

Capacity (in Btu/h) by its power input (in watts) at full-load conditions. The higher the EER, the More efficient the unit. The cooling effect produced is quantified as tons of refrigeration (TR). The above TR is also called as air-conditioning tonnage.

There are Split and cassette ACs installed in Trident Academy Of Technology in various areas of various capacity whose detail is given below:-

Sl No.	Location/Identification	Type(Window/Split)	QTY	TR	Room Temp. (°C)	AC-Tout (°C)	AC-Tin (°C)	Room-RH (%)	Area (m2)	Air velocity (m/s)	Enthalpy Hout	Enthalpy Hin	Heat Load in TR	KW supplied	(Eff.) Power per Ton (KW /TON)	EER
1	Guest House	Split	34	1.5	24	11	19	52	0.03	3	24	37	0.4	0.6	1.5	2.3
2	Academic Building	Split/ Cassette	20	2	24	10	18	52	0.03	2	24	37	0.4	0.5	1.5	2.3
3	Administration	Split	2	1.5	23	12	20	52	0.03	2	25	38	0.3	0.6	1.7	2.1

Remarks: - We have checked the Energy Efficiency Ratio of all AC's and EER of all AC's is fairly OK. But in future, you can purchase 5-Star rated invertor-based split AC's because power consumption of inverter-based BEE 5-Star rated AC's is less than non-star rated AC's.

5. CEILING FANS ANALYSIS

In the College, 783 Ceiling Fans, and 32 bracket fans are installed.

Sl No.	Location/Identification	Ceiling Fan-50W	Bracket Fan 45W	Ceiling Fan-35W
1	Guest House	71	1	
2	Boys Hostel	174		
3	Girls Hostel	212		
4	Academic Building	0	31	326
5	TOTAL	457	32	326

Observation and Suggestions:

In the College, ceiling fans of 50 W are installed along with BEE 5 Star Rated of 30W Ceiling Fans. We recommend that the college to consider purchasing BEE 5 star rated 30W ceiling fans for all future purchases.

Note:- Energy savings will increase or decrease if the operating hours of the machine /equipment will be increased or decrease and the payback period will also increase or decrease if the cost of investment(Cost of machine/equipment/accessories of the machine) will increase or decrease because the cost of investment is taken on a tentative basis.

6. ANALYSIS OF LIGHTING SYSTEM

6.1 Brief description of the existing system

For assessing the energy efficiency of the lighting system, an Inventory of the Lighting System has been noted/collected, with the aid of a lux meter, measurement and documentation of the lux levels at various locations at the working level have been done.

6.2 Inventory of Lighting

Sl. No.	Location/ Identification	200W-LED High Mast	10W LED	12 W LED Round	36W lights	20W LED
1	Guest House	0	0	64	0	0
2	Boys Hostel	0	0	181	0	0
3	Girls Hostel	0	0	188	0	0
4	Academic Building	69	179	194	315	61
	TOTAL	**69**	**179**	**627**	**315**	**61**

6.3 Lux Measurement

Description	Lux	Remark
Class Rooms	120 to 235	Acceptable
Offices	130 to 240	Acceptable
Corridors	35 to 90	Acceptable
Washrooms	45 to 76	Acceptable
Outdoor	36 to 95	Acceptable
Computer Lab	150 to 289	Acceptable
Parking area	45 to 94	Acceptable
Canteen	69 to 185	Acceptable

Observation

The college has initiated an LED-based lighting solution, but there are still nearly 315 (36W) tube lights and CFL bulbs. LEDs save energy, the life span is much greater, and emit virtually no heat. We recommend replacing the tube lights with LEDs.

We also recommend using solar lights for open areas like parking, ground, street lights, etc.

Table below shows the performance characteristics comparison of all luminaries.

Table - Luminous Performance Characteristics of Commonly Used Luminaries					
Type of Lamp	Lumens/Watt		Colour Rendering Index	Typical Application	Typical Life
	Range	Avg			
Incandescent	8-18	14	Excellent (100	Homes, restaurants, general lighting emergency lighting	1000
Fluorescent lamps	46-60	50	Good w.r.t coating (67-77	Offices, shops, hospital homes	5000
Compact fluorescent Lamps (CFL)	40-70	60	Very Good (85	Hotels, shops, homes, offices	8000-10000
High-pressure mercury (HPMV)	44-57	50	Fair (45)	General lighting in factories, garages, car parking. flood lighting	5000
Halogen lamps	18-24	22	Excellent (100	Display, flood lightening, stadium exhibition grounds, construction areas	2000 - 4000
High-pressure sodium (HPSV) SON	67-121	90	Fair (22)	General lighting in war houses, factories, stree lighting	6000 - 12000
Low-pressure sodiu (LPSV) SOX	101-175	150	Poor (10)	Roadways, tunnels, canals, street lighting	6000 - 12000
Metal halide lamps	75-125	100	Good (70)	Industrial bays, spot lighting, flood lighting, retail stores	8000
LED Lamps	30-50	40	Good (70)	Reading lights, desk lamps, night lights, spotlights, security lights, signage lights, e	40000 - 10000

7. OTHER POWER CONSUMPTION

7.1 Infrastructure Details

Sl No.	Location/ Identification	Desktop	Laptop	Printers	Scanners	Servers	Other
	Computer Lab	30					
	Administration	42	1	22	2	Nil	

7.2 Pump Details

Sr. No.	Description	Unit	Pump No.-1	Pump No.-2	Pump No.-3
Make			KS6C-0505 (Submersible Pump-2)	KOS844+ (Monoblock-total No-4)	KOS325+ (Monoblock Total No.-2)
1	Rated Power of Motor	KW	3.7	5.5	2.2
2	Motor Eff.	%	47	50	50
3	Discharge Head	m	120-690	180-640	180-520
4	Suction Head	m	12-58	24-44	12-28
5	Pump Type	Type	Submersible	Monoblock	Monoblock

7.3 Other Load Details

Sl No.	Location/ Identification	60W Exhaust Fan	35W Exhaust Fan	82W Exhaust Fan
1	Guest House	30		
2	Boys Hostel	27		
3	Girls Hostel	26		
4	Academic Building		60	8

ANALYSIS

There should be regular maintenance schedule of Geyser and water coolers. College should install solar water heater instead of electric geysers. Solar geysers are convenient to use and cost effective as well as environment friendly. Computers, more than 5 years should be replaced with new computers/laptops.

8. CAPACITOR BANK

Sl. No.	Location/ Identification	Capacity in KVAR
1	Main LT Panel1 Room	165
2	Main LT Panel2 Room	165

******* END OF THE REPORT ********

CERTIFICATES OF THE AWARDS RECEIVED FROM RECOGNIZED AGENCY

Forest & Environment Department, Government of Odisha

Biju Patnaik Award
for
WILDLIFE CONSERVATION-2023
(Sub-Divisional Level)

This certificate is awarded in recognition of outstanding performance in the field of Forest protection and conservation to

Dr. Manas Ranjan Senapati

City Forest Division,

Bhubaneswar Sub Division of

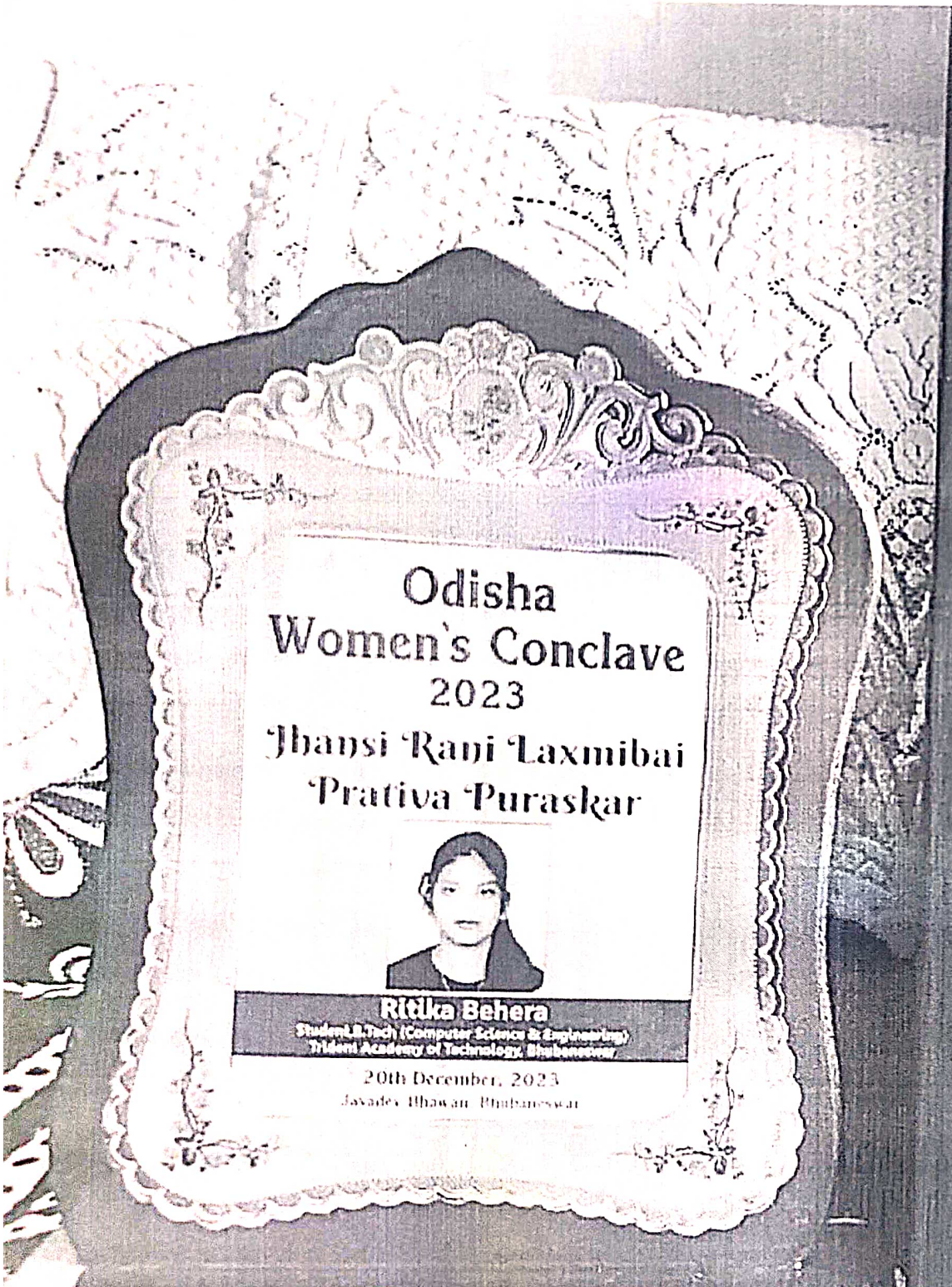
Khordha District on the occasion of the District Level Celebration of the 69th Wildlife Week 2023.

Chief Guest

Divisional Forest Officer
Khordha Division

ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar



Odisha Women s Conclave

2023

Organised By

EGF

EVER GREEN FORUM

JHANSI RANI LAXMIBAI
PRATIVA PURASKAR
is proudly presented to

Ritika Behera

Student, B.Tech (Computer Science & Engineering)
Trident Academy of Technology, Bhubaneswar

in recognition for her significant contribution in the field of Social Service
on the occasion of Odisha Women s Conclave-2023

20th December 2023, Jayadev Bhawan, Bhubaneswar

ATTESTER

Ritika Behera
2nd year Student, CSE, Trident Academy of Technology,
Bhubaneswar

Ritika Behera is currently pursuing 3rd semester B.Tech in Computer Science and Enginee Trident Academy of Technology with a passion for social service and sustainability. As the leader girls' team in her college's Kartavya club, she has embraced the opportunity to make a positive imp both in her campus community and the environment.

In her role, she has cultivated a sense of purpose within the club, fostering a collaborative spirit it's members. Together they have undertaken various social service projects, addressing issues that to her local community and the broader societal context.

Whether it's organizing charity events, volunteering at local shelters, or conducting awareness camp she strive to create meaningful change, through innovative projects and awareness campaigns. She towards creating a campus culture that values Eco-friendly practices.

From waste reduction initiatives to promoting energy conservation, her goal is to instill a se environmental consciousness among her peers. She is working on UNSDG (United Nations Susta Development Goals). Her team has organized many events for plantations in her college and she h attended lots of plantation activities that took place in her locality.

She has also distributed clothes among people in different slum areas. She with her team members, slum areas in every Sunday to teach the students of slum areas. They also work on food management and provide food and drink to needy people.

She has different future plans which she will be implementing in the future with her team memb essence, she is a dedicated and forward-thinking individual, driven by a desire to create positive c Through her involvement in the social service and sustainability, she is not only contributing betterment of her college community but also shaping a future where social responsibility environmental consciousness are integral parts of the collective ethos.

ATTESTED
Principal
Trident Academy of Technology
Bhubaneswar-751024

ଓଡ଼ିଶା ସରକାର

ଜଙ୍ଗଲ ଓ ପରିବେଶ ବିଭାଗ

ପ୍ରକୃତି ମିତ୍ର ପୁରସ୍କାର

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ପ୍ରକୃତି ସଂରକ୍ଷଣ ଓ ପରିବେଶ ସୁରକ୍ଷା କ୍ଷେତ୍ରରେ

ଗ୍ରାଜୁଏଟ୍ସ ଏକାଡେମୀ ଅଫ୍ ଟେକ୍ନୋଲୋଜି, ଭୁବନେଶ୍ୱରଙ୍କୁ

ପ୍ରଦାନ କରାଯାଇଛି

ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar-751024

CERTIFICATE

OF PARTICIPATION

PROUDLY PRESENTED TO

This is to certify that Trident Academy of Technology *has participated in the program held on the occasion of* ***VANMAHOSTAV 2023*** *in association with* ***NSS ,***

SACRED & KARTAVYA club of Trident Group of Institution

Sponsored by

Indian Oil Corporation Limited (IOCL)

ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar-751024

Dr. D.N. PATTNAYAK
Principal

R. Ravi Kishore

GENERAL MANAGER

ସବୁଜ ପାହାଡ଼ ପ୍ରକଳ୍ପ

ଶିଖରଚଣ୍ଡୀ

ପ୍ରମାଣ ପତ୍ର

ଏହି ପ୍ରମାଣ ପତ୍ରଟି ଶିଖରଚଣ୍ଡୀ ପାହାଡ଼ର ସବୁଜିମା ସଂରକ୍ଷଣ ନିମନ୍ତେ ଆପଣଙ୍କ ଆକୁଣ୍ଠିତ ସହଯୋଗ ତଥା ଏକ ବୃକ୍ଷର ରକ୍ଷଣାବେକ୍ଷଣର ନିଷ୍ପତ୍ତି ନେଇଥିବାରୁ ପ୍ରଦାନ କରାଗଲା ।

ATTESTED

ଆଞ୍ଚଳିକ ମୁଖ୍ୟ ବନ ସଂରକ୍ଷକ,
ଭୁବନେଶ୍ୱର

୧୭ ସେପ୍ଟେମ୍ବର୍ ୨୦୨୩

Principal
Academy of Technology
Bhubaneswar-751024

SeQR TMT BARS FOR SAFE HOMES

Presents

GREENATHON

WALKATHON

STRIDE FOR A CAUSE

CERTIFICATE OF ACHIEVEMENT

This is to certify that you have actively participated in the **GREENATHON**: Walkathon to Save the Environment and Plant Trees

Thank you for being a part of this meaningful initiative and for playing a vital role in creating a greener and more sustainable world.

Conducted by

STEEL AUTHORITY OF INDIA LIMITED

ATTESTED

Trident Academy of Technology
Bhubaneswar-751024

16.07.23

DATE

Banking Partner | Supported by | Healthcare Partner | Event Conceptualized by

Akrutosh Panda

SIGNATURE

नालको NALCO

Annual Flower Show 2023

This is ify that

Trident Academy Technology

Participated in the Flower Show

held on 28th & 29th January, 2023

at Nalco Nagar, Bhubaneswar & awarded

Best display of flowering potted plants

Congratulations

Ashutosh Rath

General Manager (Administration & PR-CC)

ATTESTED

Principal

dent Academy of Techno

ubaneswar-75102

REGIONAL PLANT RESOURCE CENTRE
&
PLANT LOVERS' ASSOCIATION

Certificate

This is to certify that Trident Group of Institutions
is awarded certificate prize for participation
in the Annual Flower Show 2023, Bhubaneswar.

President
Plant Lovers' Association

Chief Executive
Regional Plant Resource Centre

ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar-751024

REGIONAL PLANT RESOURCE CENTRE
&
PLANT LOVERS' ASSOCIATION

BHUBANESWAR

CERTIFI

This is to certify that Trident Academy of Technology

is awarded Merit prize for Display of Mixed Potted Plants -

Institution in the 32nd Annual State Level Flower Show

held on 11th and 12th January, 2020 at the Regional Plant Resource Centre, Bhubaneswar.

PRESIDENT
Plant Lovers Association

CHIEF EXECUTIVE
Regional Plant Resource Centre

ATTESTED
Principal
Trident Academy of Technology
Bhubaneswar-751024

REGIONAL PLANT RESOURCE CENTRE
&
PLANT LOVERS' ASSOCIATION

BHUBANESWAR

CERTIFICATE

This is to certify that Trident Academy of Technology

is awarded Merit prize for Pot Aster - Open Category

in the 32nd Annual State Level Flower Show

held on 11th and 12th January, 2020 at the Regional Plant Resource Centre, Bhubaneswar.

PRESIDENT
Plant Lovers' Association

CHIEF EXECUTIVE
Regional Plant Resource Centre

ATTESTED