

INSTITUTIONAL VALUES AND BEST PRACTICES

**TRIDENT ACADEMY OF TECHNOLOGY (TAT),
BHUBANESWAR
CRITERIA - 7**



7.1.2 *Institution facilities and initiatives*



TRIDENT ACADEMY OF TECHNOLOGY (TAT),

BHUBANESWAR-751024

Documents can be viewed through the link: <https://tat.ac.in/wp-content/uploads/2024/08/7.1.2-ICT.pdf>

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PROMOTING ALTERNATE SOURCES OF ENERGY (SOLAR PANEL) -1



PROMOTING ALTERNATE SOURCES OF ENERGY (SOLAR PANEL) -2

ATTESTED

**Principal
Trident Academy of Technology
Bhubaneswar-751024**



PROMOTING ALTERNATE SOURCES OF ENERGY (WIND MILL)



ATTESTED

**Principal
Trident Academy of Technology
Bhubaneswar-751024**



CERTIFICATE OF PARTICIPATION



The following certificate is presented to TRIDENT ACADEMY OF
TECHNOLOGY from B.P.V.T
for actively participating in Odisha's Largest climate clock assembly held by
KIIT university in association with Energy Swaraj Foundation organized on
13th October, 2023.

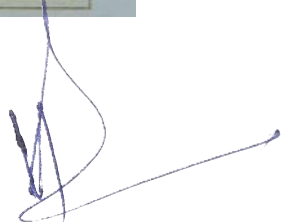
DEAN

DR. BHARAT CHANDRA ROUTARA
(SCHOOL OF MECHANICAL ENGG.)

FOUNDER

PROF. CHETAN SINGH SOLANKI
(ENERGY SWARAJ FOUNDATION)

ATTESTED


Principal
Trident Academy of Technology
Bhubaneswar-751024



TRIDENT ACADEMY OF TECHNOLOGY

Ref: TAT/P/816/2021

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

1. Purpose:

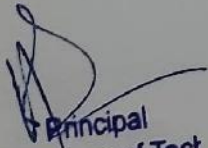
The main objective of this policy is to formulate comprehensive guidelines and regulations on the refurbishment and construction of new buildings, the renovation and replacement of old infrastructure, and energy-saving and carbon-reduction practices to be followed by all users of the university.

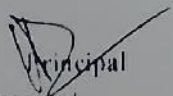
2. Responsibility center: Office of the Operation

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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Principal
Trident Academy of Technology
Bhubaneswar-751024


Principal
Trident Academy of Technology
Bhubaneswar-751024

CERTIFICATE



CERTIFICATE

PRESENTED TO

TRIDENT ACADEMY OF TECHNOLOGY

F-2, Chandaka Industrial Estate In front of Infocity, Infocity
Chandrasekharpur, Bhubaneswar 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



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

FOOD WASTE COMPOST MACHINE



ATTESTED

**Principal
Trident Academy of Technology
Bhubaneswar-751024**

SEWAGE TREATMENT PLANT (STP) -1



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Principal
Trident Academy of Technology
Bhubaneswar-751024

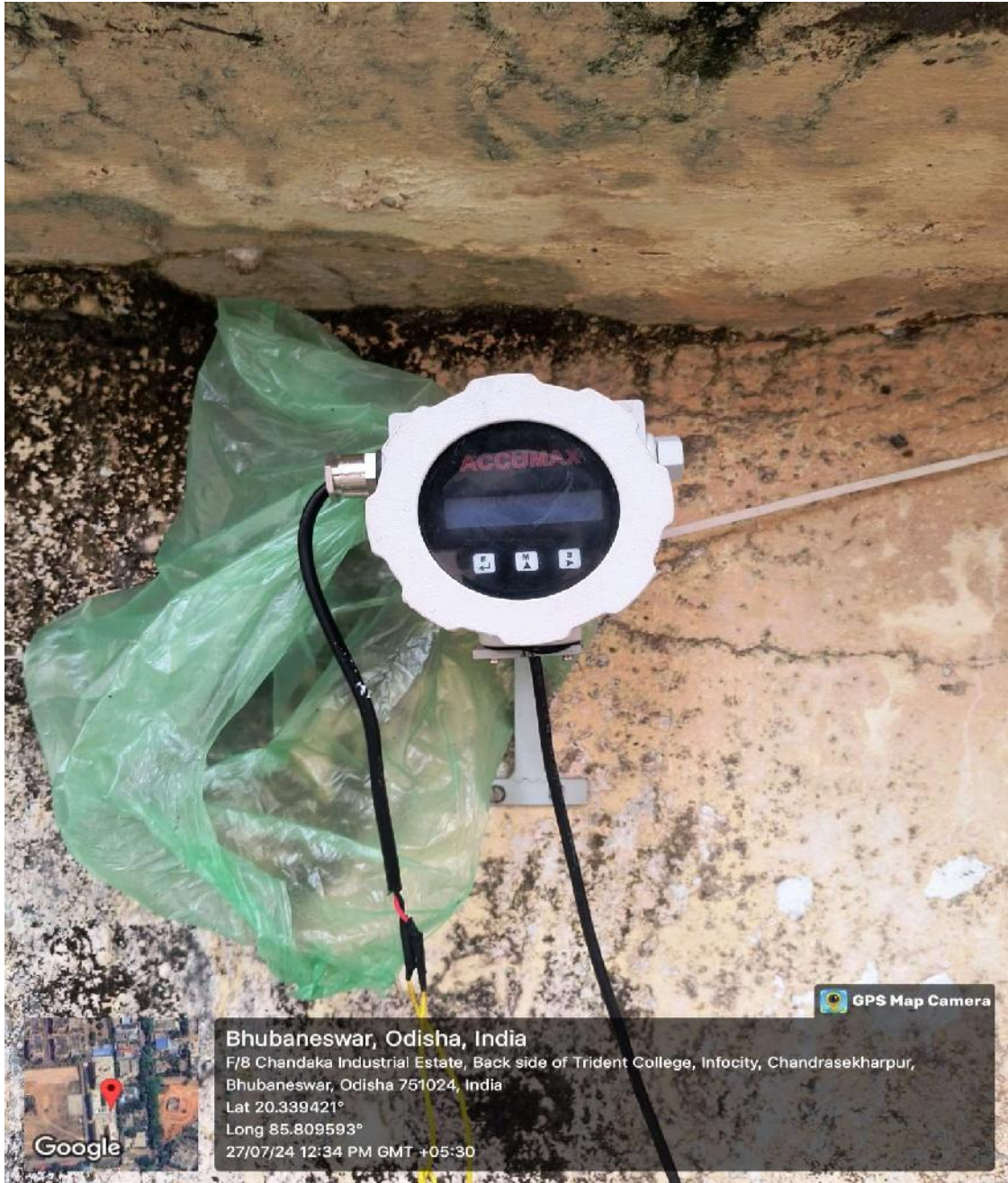
SEWAGE TREATMENT PLANT (STP) -2



ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar-751024

RAINWATER HARVESTING



ATTESTED

**Principal
Trident Academy of Technology
Bhubaneswar-751024**

Plot No. 75/18 Samantapur Near Sank School Square, Bhubaneswar-751005,
E-mail: msarchitects_2012@hotmail.com, msconarch@yahoo.co.in

Ref MSA/TAT/2023-24/15

Date : 18.04.2023

C E R T I F I C A T E **For sewage disposal system**

This is to certify that all Academical buildings and campus of Trident Academy of Technology Over Plot no. F2, HDCO allotted Rev plot no. 7(p), Khata no 612, Chandaka II, Mouza- Chandrasekharpur, Tahsil Bhubaneswar, Dist Khorda provided Sewage Treatment Plant (STP) of 100 KLD capacity located on the south eastern corner of the plot. As per norms, this is sufficient to cater to the sewage generated in the campus.

ATTESTED


Principal
Trident Academy of Technology
Bhubaneswar-751024

Plot No.-25/238, Samantapuri Near Sainik School Square, Bhubaneswar-751005,
E-mail: msarchitects_2012@hotmail.com, msconarch@yahoo.co.in

Ref MSA/TAT/2023-24/15

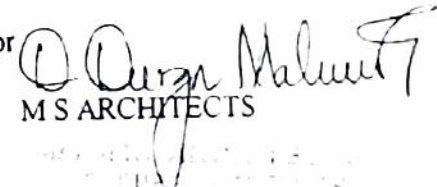
Date : 18.04.2023

CERTIFICATE **For sewage disposal system**

This is to certify that all Academical buildings and campus of Trident Academic of Technology Over Plot no. F2, IDCO allotted Rev plot no. 7(p), Khata no. 612, Chandaka IE, Mouza- Chandrasekharpur, Tahsil – Bhubaneswar, Dist. – Khorda provided Sewage Treatment Plant (STP) of 100 KLD capacity located on the south eastern corner of the plot. As per norms, this is sufficient to cater to the sewage generated in the campus.

ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar-751027

For 
M S ARCHITECTS

Plot No.-25/238, Samantapuri Near Sainik School Square, Bhubaneswar-751005,
E-mail: msarchitects_2012@hotmail.com, msconarch@yahoo.co.in


Ref MSA/TAT/2023-24/13


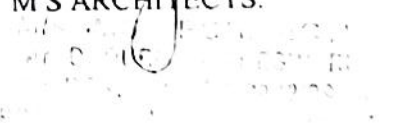
Date : 18.04.2023

CERTIFICATE **For potable water supply**

This is to certify that all Academical buildings and campus of Trident Academic of Technology Over Plot no. F2, IDCO allotted Rev plot no. 7(p), Khata no.612, Chandaka IE, Mouza- Chandrasekharpur , Tahsil – Bhubaneswar, Dist. – Khorda have provided potable water supply in the form of 5 no's of bore with 3 hp 3Phase submersible pump .

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Principal
Trident Academy of Technology
Bhubaneswar-751024

For 
M S ARCHITECTS.




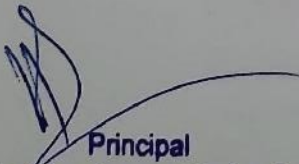
TRIDENT ACADEMY OF TECHNOLOGY

Energy Conservation Pledge

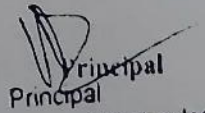
Trident Academy of Technology is fully dedicated and committed towards energy conservation. We commit to use 100% renewable energy in a phased manner. In order to achieve the target, we hereby pledge to conserve energy by:

- ❖ 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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Principal

Trident Academy of Technology
Bhubaneswar-751024


Principal

Trident Academy of Technology
Bhubaneswar-751024



TRIDENT ACADEMY OF TECHNOLOGY

Ref: TAT/TP/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 & its 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 & its 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 change action plans. India & its National Action Plan for Climate Change was launched in 2008 aiming to mitigate and adapt the adverse

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Principal



TRIDENT ACADEMY OF TECHNOLOGY

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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Bhubaneswar-751024



TRIDENT ACADEMY OF TECHNOLOGY

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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Bhubaneswar-751024

Principal
Principal
Trident Academy of Technology
Bhubaneswar-751024



TRIDENT ACADEMY OF TECHNOLOGY

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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Bhubaneswar, Odisha



TRIDENT ACADEMY OF TECHNOLOGY

- 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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Bhubaneswar-751024



TRIDENT ACADEMY OF TECHNOLOGY

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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Principal

Trident Academy of Technology



TRIDENT ACADEMY OF TECHNOLOGY

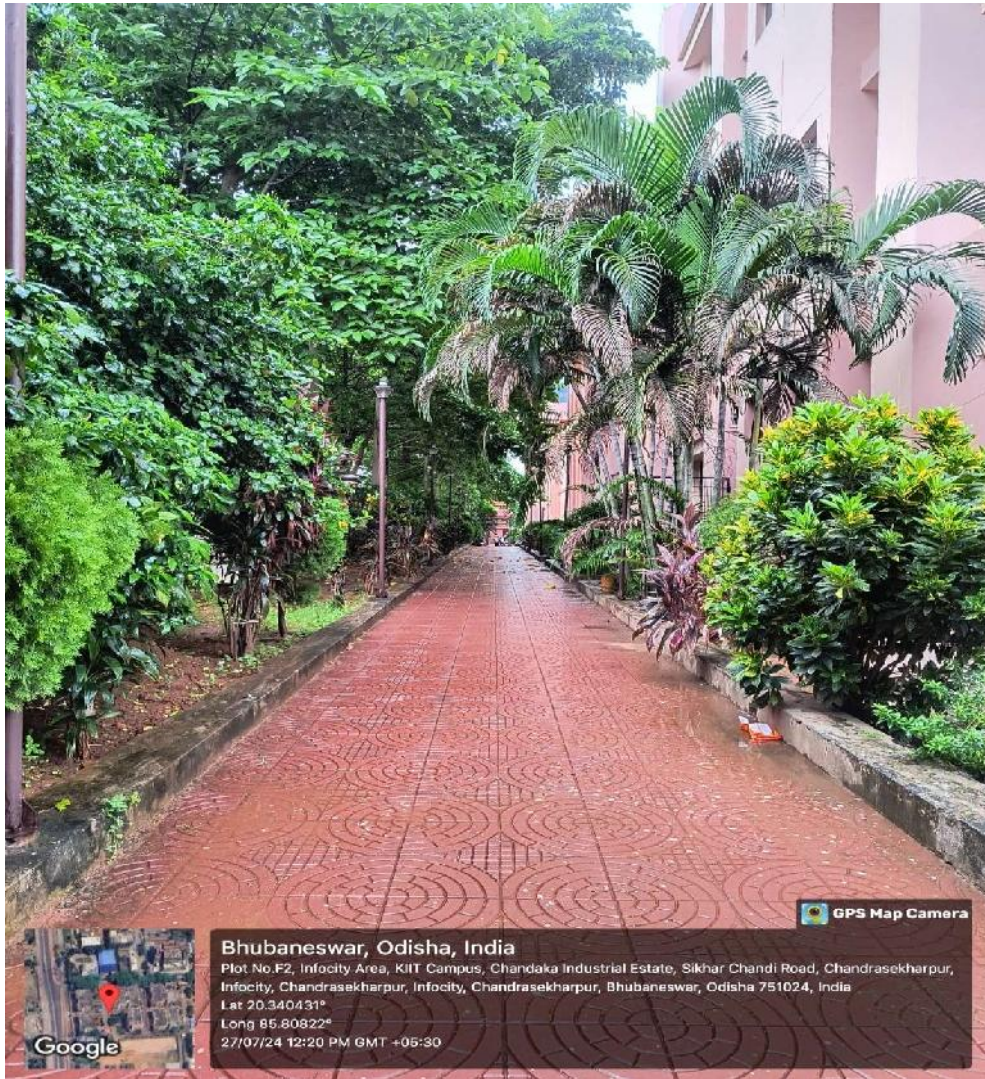
3. Expanding the rainwater harvesting unit for more water discharge and recycling.
4. Installing a centralized water purifier system with several local units at various campus locations.
5. Promoting bicycle usage by collaborating with service providers.
6. Expanding the composting system by engaging 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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Principal
Trident Academy of Technology
Bhubaneswar-751024

Principal
Trident Academy of Technology
Bhubaneswar-751024

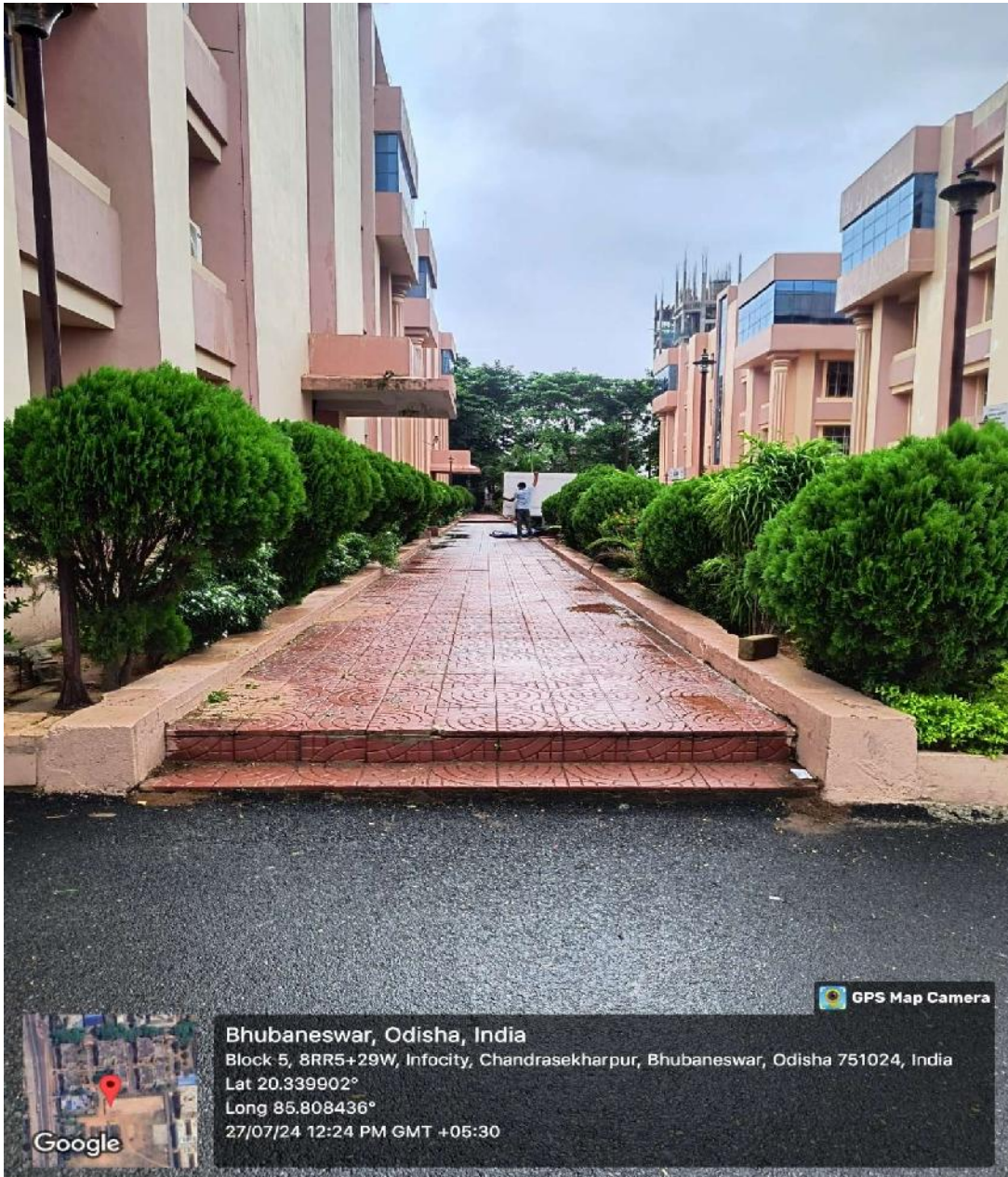
PEDESTRIAN-FRIENDLY ROAD 1



ATTESTED

**Principal
Trident Academy of Technology
Bhubaneswar-751024**

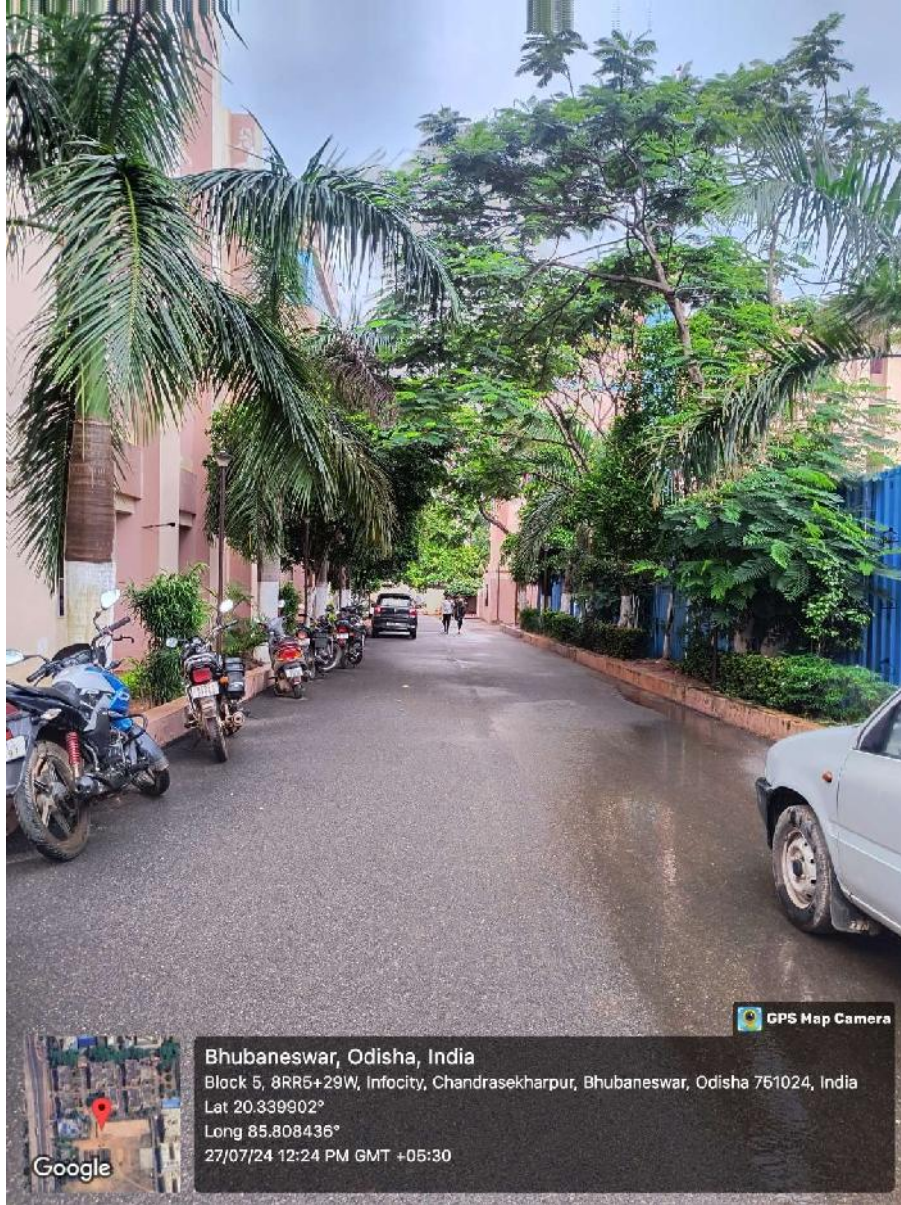
PEDESTRIAN-FRIENDLY ROAD 2



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Bhubaneswar-751024

GREEN PEDESTRIAN-FRIENDLY ROAD 3



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**Principal
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Bhubaneswar-751024**

GREEN HOUSE



ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar-751024

AWARDS AND RECOGNITION FOR GREEN INITIATIVE



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**Principal
Trident Academy of Technology
Bhubaneswar-751024**



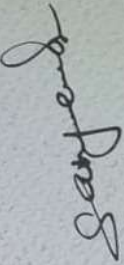
ସବୁଜ ପାହାଡ଼ ପ୍ରକଳ୍ପ

ଶିଖରଚଣ୍ଡୀ

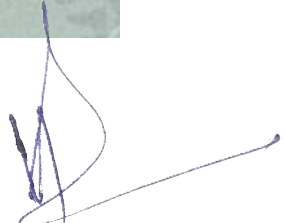
ପ୍ରମାଣ ପତ୍ର

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

୧୭ ସେପ୍ଟେମ୍ବର ୨୦୨୩


ଆଞ୍ଚଳିକ ମୁଖ୍ୟ ବନ ସଂରକ୍ଷକ,
ଭୁବନେଶ୍ୱର

ATTESTED



Principal
Trident Academy of Technology
Bhubaneswar-751024



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

16.07.23

DATE

Banking Partner



Supported by



Healthcare Partner



Event Conceptualized by



Signature

SIGNATURE

ATTESTED

**Principal
Trident Academy of Technology
Bhubaneswar-751024**



ATTESTED

**Principal
Trident Academy of Technology
Bhubaneswar-751024**



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.

Poasina

Divisional Forest Officer

Khordha Division

ATTESTED

**Principal
Trident Academy of Technology
Bhubaneswar-751024**

GREEN AWARD FROM GOVT. OF ODISHA



ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar-751024

Plot No -25/238, Samantapuri Near Sainik School Square, Bhubaneswar-751005,
E-mail: msarchitects_2012@hotmail.com, msconarch@yahoo.co.in


Ref MSA/TAT/2023-24/16

Date : 18.04.2023

CERTIFICATE **Fare weather approach road**

This is to certify that all Academical buildings and campus of Trident Academy of Technology Over Plot no. F2, IDCO allotted Rev plot no. 7(p), Khata no.612, Chandaka IE, Mouza- Chandrasekharpur, Tahsil – Bhubaneswar, Dist. – Khorda. has an all weather approach road near college campus which is called the technology corridor near the Infocity of Chandrasekharpur (200 feet wide Road) There are four separate entrance gates including two gates certified as suitable for emergency fire service vehicles.

ATTESTED


Principal
Trident Academy of Technology
Bhubaneswar-751024

For


M S ARCHITECTS



TRIDENT ACADEMY OF TECHNOLOGY

Ref: TAT/P/420/2018

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

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.

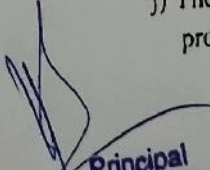
2. **Responsible centre:** Office of the Principal


3. Procedure:

The following procedures are to be adopted for the above:

- The use of smoke and tobacco is to be banned within the boundary of the Institute
- The purchase and sale of smoking and tobacco are banned inside the Institute campus.
- Vehicles emitted smoke in excess of the permissible limit are to be banned from entering the Institute campus.
- Vehicles are to be monitor for the pollution testing certificates.
- Burning of garbage is to be prohibited inside the Institute campus.
- The use of alcohol is to be banned inside the Institute campus.
- The use of any form of intoxicant is to be prohibited.
- 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.
- Code of Conduct is to be provided to students and staff regarding smoking, tobacco and alcohol.
- The breach of policy by students and staff is to be considered a serious offence and to be prosecuted under disciplinary action.

ATTESTED


Principal
Trident Academy of Technology
Bhubaneswar-751024


Principal
Trident Academy of Technology
Bhubaneswar-751024



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).

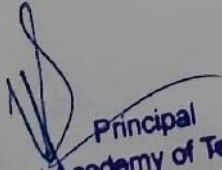
2. Responsibility Centre: Principal

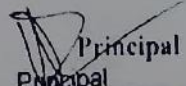
3. Procedure:

Institute has considered following policy guidelines to restore the land area in the background of sustainability.

- 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
- Habitats of native animals and bird shall be considered while restoring the land area to ensure that their food web is protected.
- Students' community shall be engaged in planting, conservation and education on restoration of ecology and sustainability principles.
- 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.

ATTESTED


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Bhubaneswar-751024


Principal
Trident Academy of Technology
Bhubaneswar-751024



TRIDENT ACADEMY OF TECHNOLOGY

Ref: TAT/P/817/2021

Name of the policy	Zero Emission Policy	Department responsible Prepared by	All 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.

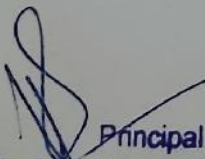
Objectives

- To develop a emission free campus
- To implement processes, procedure, and initiatives that ensure compliance with environmental legislation and best practice

Scope

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

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Principal

Trident Academy of Technology
Bhubaneswar-751024



TRIDENT ACADEMY OF TECHNOLOGY

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.

ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar-751024

Principal
Trident Academy of Technology
Bhubaneswar-751024

AUDIT CERTIFICATE



CERTIFICATE

PRESENTED TO

TRIDENT ACADEMY OF TECHNOLOGY

F-2, Chandaka Industrial Estate In front of Infocity, Infocity
Chandrasekharpur, Bhubaneswar 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.

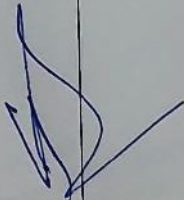

SIGNATURE



ATTESTED

11.05-2023
DATE OF AUDIT

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Bhubaneswar-751024

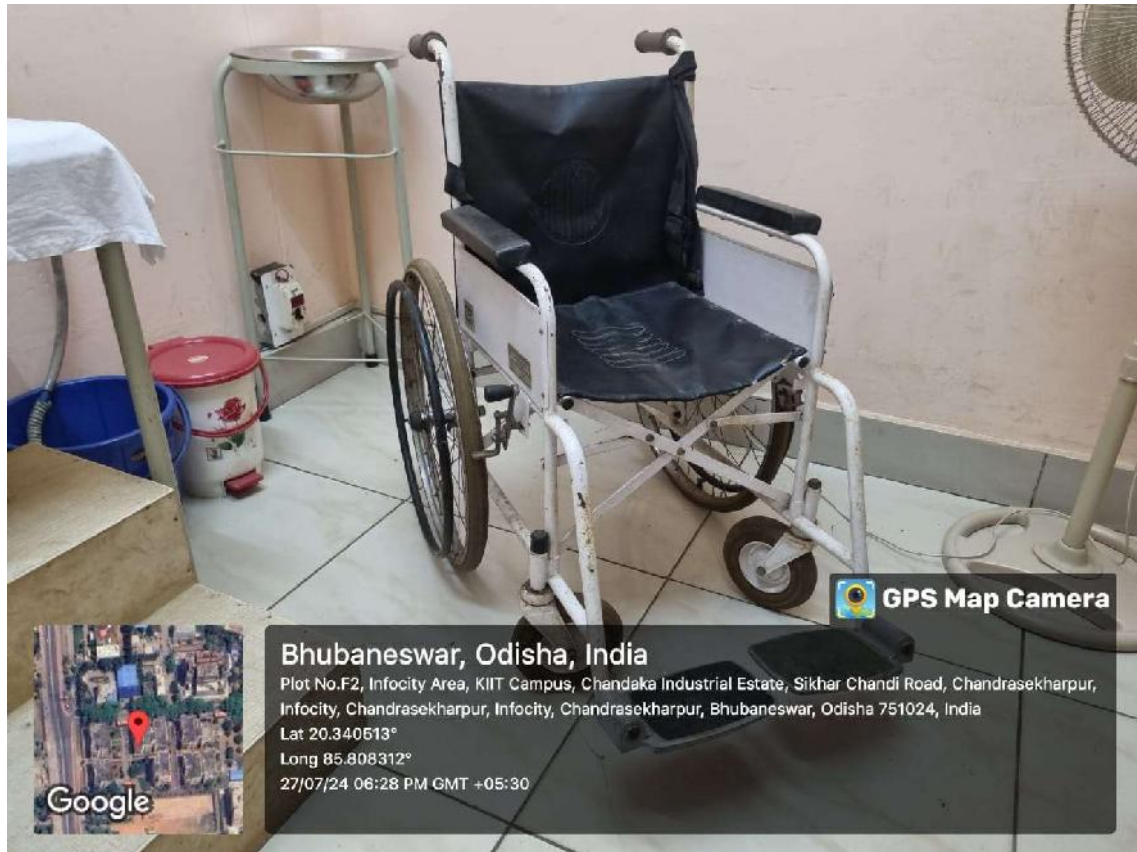
LIFT FOR DIVYANG'S OF CAMPUS POPULATION




ATTESTED

**Principal
Trident Academy of Technology
Bhubaneswar-751024**

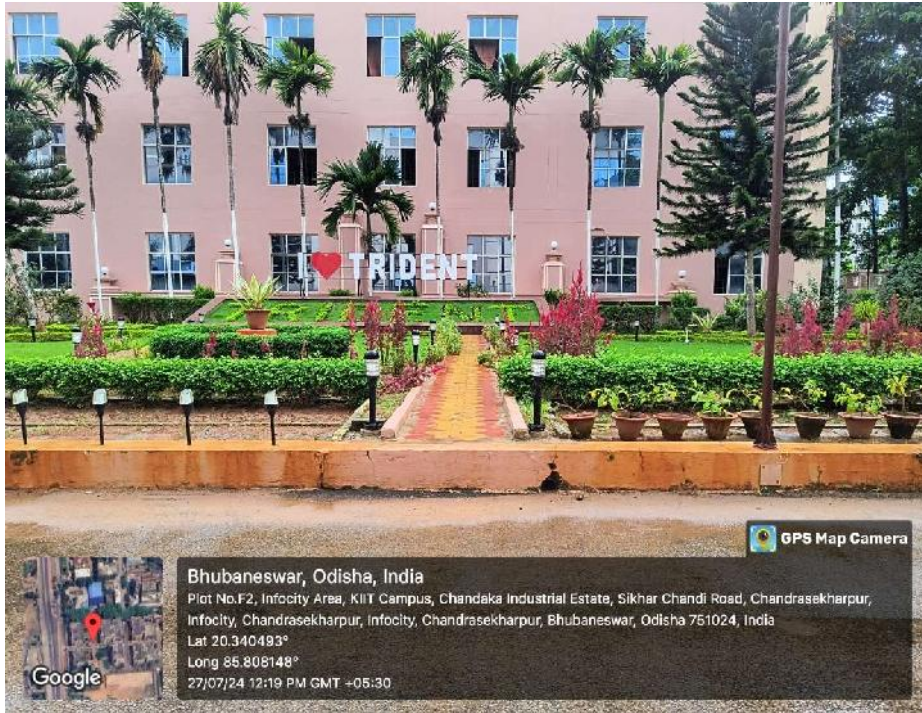
WHEELCHAIR FOR DIVYANG'S OF CAMPUS POPULATION



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Trident Academy of Technology
Bhubaneswar-751024

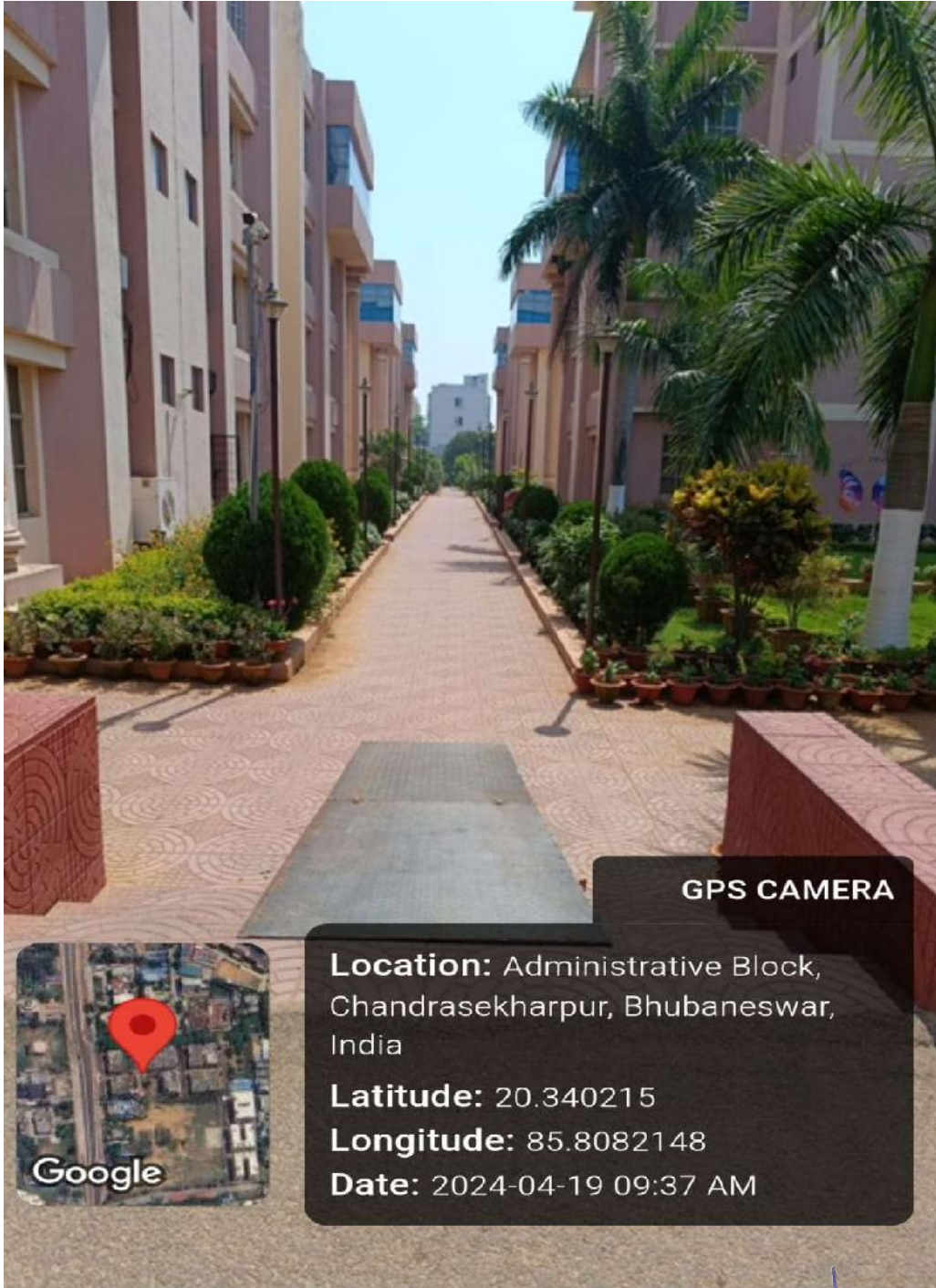
GREEN & BARRIER FREE ENTRANCE



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Bhubaneswar-751024

RAMP FOR DIVYANG CAMPUS POPULATION



GPS CAMERA



Location: Administrative Block,
Chandrasekharpur, Bhubaneswar,
India

Latitude: 20.340215

Longitude: 85.8082148

Date: 2024-04-19 09:37 AM

ATTESTED

Principal
Trident Academy of Technology
Bhubaneswar-751024

ARCHITECTS , INTERIOR DESIGNERS , ESTIMATORS ,
VALUERS , PROJECT MANAGEMENT &
GREEN BUILDING CONSULTANTS .

Plot No.-25/238, Samantapuri Near Sainik School Square, Bhubaneswar-751005,
E-mail: msarchitects_2012@hotmail.com, msconarch@yahoo.co.in

Ref MSA/TAT/2023-24/14


Date : 18.04.2023

CERTIFICATE **For vehicle parking facility**

This is to certify that all Academical buildings and campus of Trident Academic of Technology Over Plot no. F2, IDCO allotted Rev plot no. 7(p), Khata no.612, Chandaka IE, Mouza- Chandrasekharpur , Tahsil – Bhubaneswar, Dist. – Khorda have sufficient Vehicular parking for students and staff buses. Since campus is 10km from railway station, the main means of communication is Mass communication of college bus. Total approx. 10,300 sqm parking Space provided scatteredly in the campus in the form of covered and open parking space.

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Trident Academy of Technology
Bhubaneswar-751024

For 
M S ARCHITECTS.
10/1, CHANDAKA, Bhubaneswar-751024
CONTACT NO. 9437096335
9437096335

Plot No -25/238, Samantapuri Near Sainik School Square, Bhubaneswar-751005,
E-mail: msarchitects_2012@hotmail.com, msconarch@yahoo.co.in


Ref MSA/TAT/2023-24/12

Date : 18.04.2023

CERTIFICATE **For barrier free environment**

This is to certify that all Academical buildings and campus of Trident Academic of Technology Over Plot no. F2, IDCO allotted Rev plot no. 7(p), Khata no.612, Chandaka IE, Mouza- Chandrasekharpur , Tahsil – Bhubaneswar, Dist. – Khorda has equipped with barrier free access in the form ramp with hand railings and Toilets with commode with side railings etc. are provided for physically Challenged students and staffs.

ATTESTED


Principal
Trident Academy of Technology
Bhubaneswar-751024

For


MS ARCHITECTS

MS ARCHITECTS



CERTIFICATE



CERTIFICATE

PRESENTED TO

TRIDENT ACADEMY OF TECHNOLOGY

F-2, Chandaka Industrial Estate In front of Infocity, Infocity
Chandrasekharpur, Bhubaneswar 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.

SIGNATURE



ATTESTED

11.05.2023
DATE OF AUDIT

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Bhubaneswar-751024



TRIDENT
ACADEMY OF
TECHNOLOGY



**TRIDENT ACADEMY OF
TECHNOLOGY**

GREEN AUDIT REPORT

2022-2023

PREPARED BY
EHS ALLIANCE SERVICES

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Principal
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Bhubaneswar-751024

CERTIFICATE



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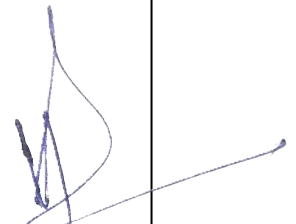


SIGNATURE



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11.05.2023
DATE OF AUDIT



Principal
Trident Academy of Technology
Bhubaneswar-751024

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ACKNOWLEDGEMENT

EHS Alliance Services would like to thank the management of Trident Academy Of Technology, Bhubaneswar, 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.



DISCLAIMER

EHS Alliance Services Audit Team has prepared this report for Trident Academy Of Technology based on input data submitted by the representatives of College complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

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.

If you wish to distribute copies of this report external to your organisation, then all pages must be included.

EHS Alliance, its staff and agents shall keep confidential all information relating to your organisation and shall not disclose any such information to any third party, except that in the public domain or required by law or relevant accreditation bodies.


EHS Alliance staff, agents and accreditation bodies have signed individual confidentiality undertakings and will only receive confidential information on a 'need to know' basis.



Signature

LEAD AUDITOR

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Bhubaneswar-751024

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

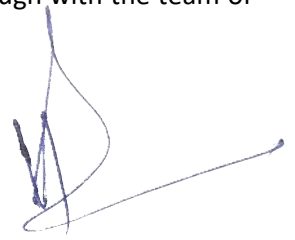
Now days, the educational institutions are becoming more thoughtful towards the environmental aspects and as a result new and innovative concepts are being introduced to make them sustainable and eco-friendly. To preserve the environment within the institution, a number of viewpoints are applied by the 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.

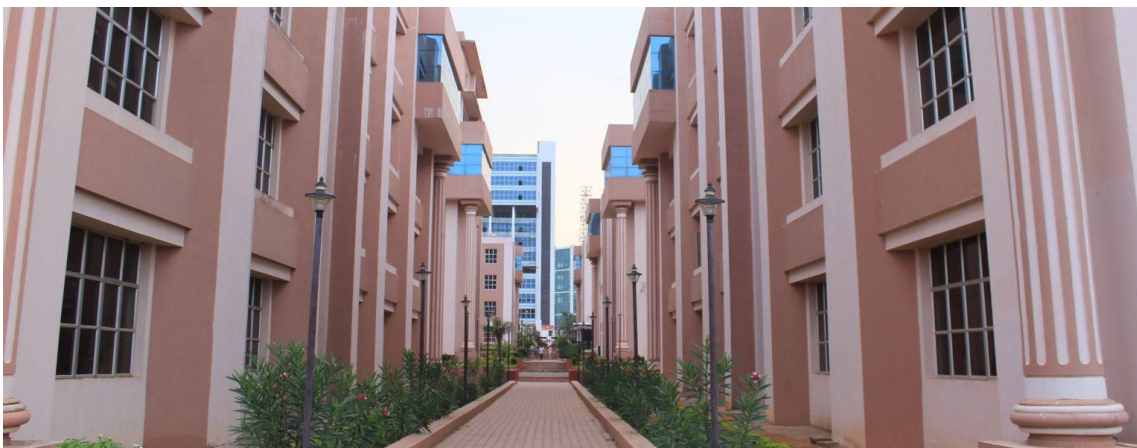
OVERVIEW OF THE COLLEGE

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Trident Academy of Technology
Bhubaneswar-751024

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.



Trident is passionate about grooming leaders who are not only thorough professionals but also are good human beings with values and “sanskars”. Emphasis is given not only on making the students academically brilliant, but grooming them as true leaders and team players, thus preparing them for real life corporate world. The college has been ranked at No.25 in recently concluded DATAQUEST CMR RANKINGS.

In the recently concluded local rankings for BTech, MCA, MBA colleges (Under Biju Patnaik University of Technology, Odisha) and BCA and BBA institutions (Under Utkal University, Odisha), the Trident colleges have got the following ranks.

- No.1 MCA institution status for Trident Academy of Creative Technology, Bhubaneswar.
- No.1 Biotechnology college of Utkal University for the School of Biotech Sciences, Trident Academy of Creative Technology, Bhubaneswar.
- No.2 BCA /BBA college status under Utkal University for the School of undergraduate studies, Trident Academy of Creative Technology, Bhubaneswar.
- No.4 Private Engineering College status under Biju Patnaik University of Technology, Odisha for Trident Academy of Technology, Bhubaneswar.

VISION

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

MISSION

- To foster holistic excellence in the new generation of students.
- To instill in them, the power of aggressive positive thinking, insatiable desire for information and knowledge, a penchant for out-of-the box ideation and capacity of execution.
- To contribute to the society with honesty and integrity through innovative research in the multi-disciplinary areas of evolving and upcoming technologies.

FACILITIES AT THE CAMPUS

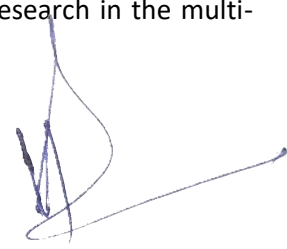
LIBRARY

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, central 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.

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Bhubaneswar, 751024



TRANSPORT

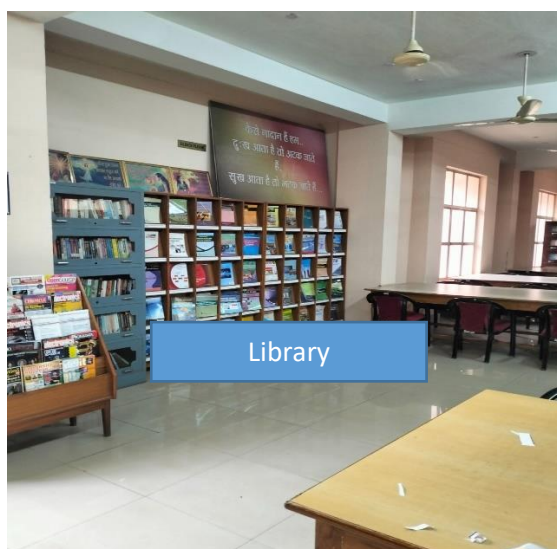
The college has outsourced the transport facility, A dedicated fleet of buses has been provided by the operator and these buses ply in five different routes picking up students from designated bus stops across the city. The present arrangement of routes can be viewed by clicking here.

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.



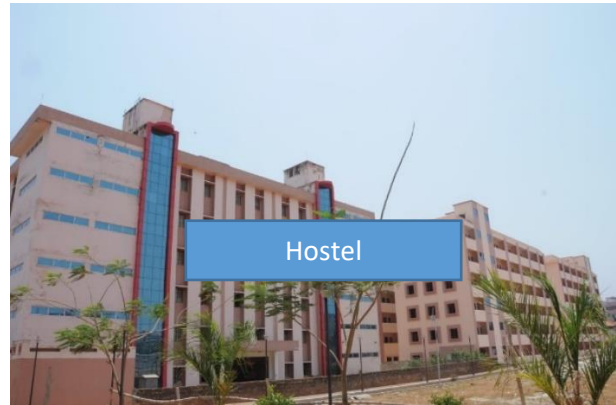
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Canteen

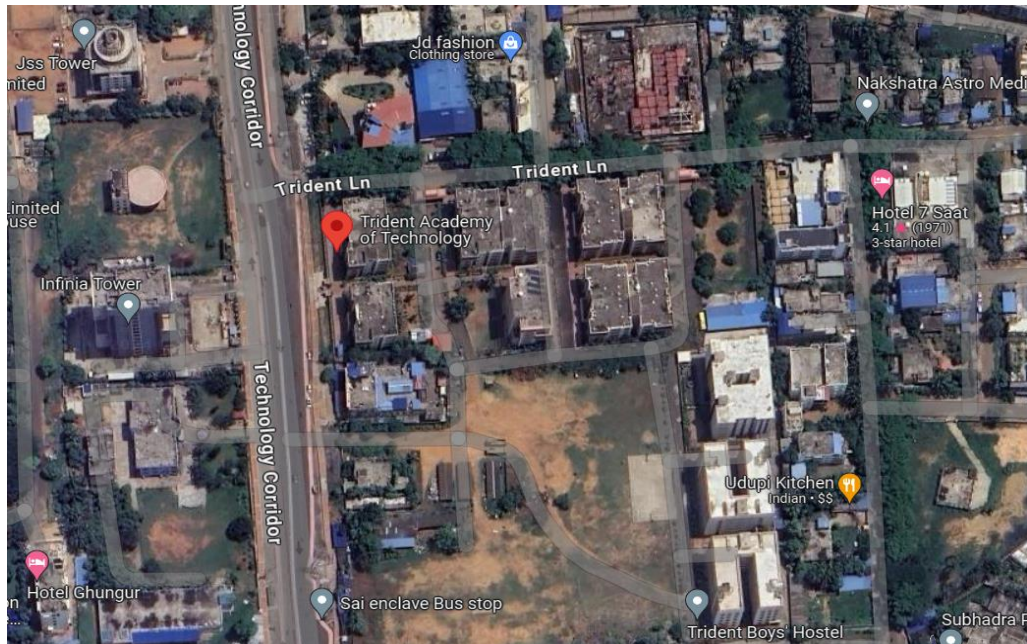


Hostel

Geo Location

Geo Coordinates from Google maps:

20.3399164, 85.8085694



AUDIT PARTICIPANTS

ATTESTED

Principal

**Trident Academy of Technology
Bhubaneswar-751024**

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.

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Principal
Trident Academy of Technology
Bhubaneswar-751024

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, Bhubaneswar, 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

ATTESTED

Principal

Trident Academy of Technology
Bhubaneswar-751024

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.

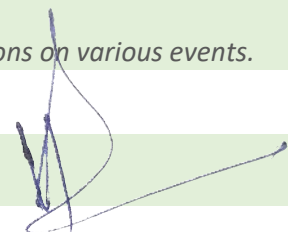
6. Is there any Plant Distribution Program for Students and Community?

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

8. Is there any Plant Ownership Program?

No

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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

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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
 $62853 \text{ kWh}/1000 \times 0.84$
 $=62853 /1000 \times 0.84$
 $= 52.80 \text{ tons}$

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

There are total 15 buses on campus
 $= (15 * 2 * 2 * 265 / 100) * 0.01$
 $= 1.59 \text{ tons}$

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

There are 7 college owned cars
 $= 7 * 4 * 2 * 265 / 100 * 0.02$
 $= 2.97 \text{ tons}$

3. CO2 emission from LPG/ PNG (Cooking)

(LPG used per year in kgs /1000) x 0.84
 $28500 \text{ kg}/1000 \times 2.99$
 $= 76.38 \text{ tons}$

3. CO2 emission from Diesel Generators

(Diesel used per year in Liters /1000) x 2.68
 $= 1500 \text{ Liters} /1000 \times 2.68$
 $= 4.49 \text{ tons}$

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

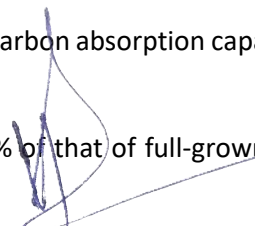
Carbon absorption by flora in the institution

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 $64 \times 22 \text{ kg CO}_2 = 1.41 \text{ tons of CO}_2$.

The carbon absorption capacity of 672 semi-grown trees is approx. 30% of that of full-grown trees. Hence the carbon absorption $672 \times 6.8 \text{ kg of CO}_2 = 4.57 \text{ tons of CO}_2$

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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 CO₂ 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

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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.

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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

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ANNEXURE I – PHOTOGRAPHS OF ENVIRONMENT CONSCIOUSNESS



Well ventilated building structure



Well maintained College campus

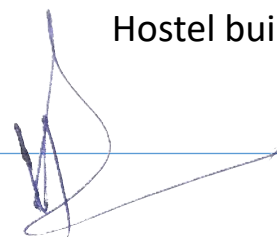


Auditorium



Hostel building

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Color coded dustbin



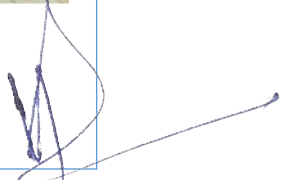
Push taps to save water



Class rooms



Uninals to save water

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Plantation drive



Green campus

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Well equipped Computer lab



Spacious library



Swatchhta abhiyaan activity



Awareness campaign



World Water Day



Awareness program

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

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TRIDENT
ACADEMY OF
TECHNOLOGY



**TRIDENT ACADEMY OF
TECHNOLOGY**

ENERGY AUDIT REPORT

2022-2023

**PREPARED BY
EHS ALLIANCE SERVICES**

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CERTIFICATE



CERTIFICATE

PRESENTED TO

TRIDENT ACADEMY OF TECHNOLOGY

F-2, Chandaka Industrial Estate In front of Infocity, Infocity
Chandrasekharapur, Bhubaneswar 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



ATTESTED

11.05.2023
DATE OF AUDIT

Principal

Trident Academy of Technology
Bhubaneswar-751024

EHS ALLIANCE SERVICES, PLOT A-72, SURYA VIHAR, GURUGRAM, 201001
WWW.EHSALL.IN | BUSINESS@EHSALL.IN | EHSALLIANCE@GMAIL.COM


ACKNOWLEDGEMENT

EHS Alliance Services Audit Team thanks the administration of Trident Academy Of Technology Bhubaneswar, Odisha for assigning this important work of Energy Audit of the College. We appreciate the co-operation to our team for the completion of the study.

Last but not the least; we would like to thank **Dr. Deba Narayan Pattanayak - Principal**, Trident Academy Of Technology for giving us an opportunity to energy audit of the campus.

We would also like to thank **Prof. Dr. Amarendra Baral -Dean, Science and Humanities, Audit Coordinator**, 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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DISCLAIMER

EHS Alliance Services Audit Team has prepared this report for Trident Academy Of Technology, Bhubaneswar, Odisha based on input data submitted by the representatives of the College complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on the information gathered.

It is further informed that the conclusions arrive 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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Vijay Singh
Lead Auditor EMS & Energy



Dr. Uday Pratap
Co-Auditor EMS & Energy

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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/m ²	watt per square metre

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INTRODUCTION OF 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.



Trident is passionate about grooming leaders who are not only thorough professionals but also are good human beings with values and “sanskars”. Emphasis is given not only on making the students academically brilliant, but grooming them as true leaders and team players, thus preparing them for real life corporate world. The college has been ranked at No.25 in recently concluded DATAQUEST CMR RANKINGS.


In the recently concluded local rankings for BTech, MCA, MBA colleges (Under Biju Patnaik University of Technology, Odisha) and BCA and BBA institutions (Under Utkal University, Odisha), the Trident colleges have got the following ranks.

- No.1 MCA institution status for Trident Academy of Creative Technology, Bhubaneswar.
- No.1 Biotechnology college of Utkal University for the School of Biotech Sciences, Trident Academy of Creative Technology, Bhubaneswar.
- No.2 BCA /BBA college status under Utkal University for the School of undergraduate studies, Trident Academy of Creative Technology, Bhubaneswar.
- No.4 Private Engineering College status under Biju Patnaik University of Technology, Odisha for Trident Academy of Technology, Bhubaneswar.

VISION

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

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MISSION

- To foster holistic excellence in the new generation of students.
- To instill in them, the power of aggressive positive thinking, insatiable desire for information and knowledge, a penchant for out-of-the box ideation and capacity of execution.
- To contribute to the society with honesty and integrity through innovative research in the multi-disciplinary areas of evolving and upcoming technologies.

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

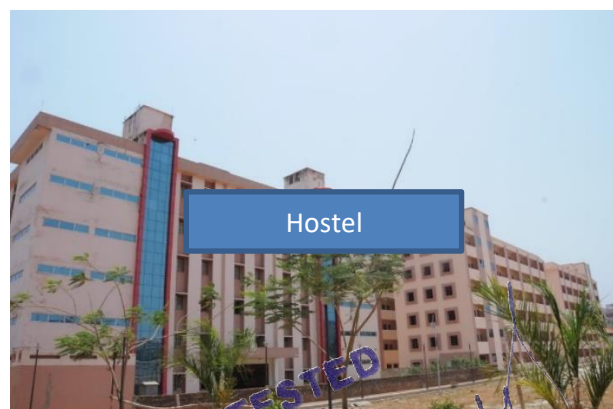
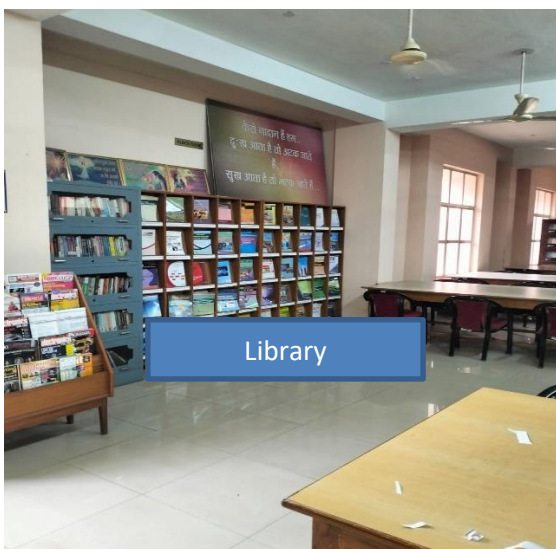
from designated bus stops across the city. The present arrangement of routes can be viewed by clicking here.

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

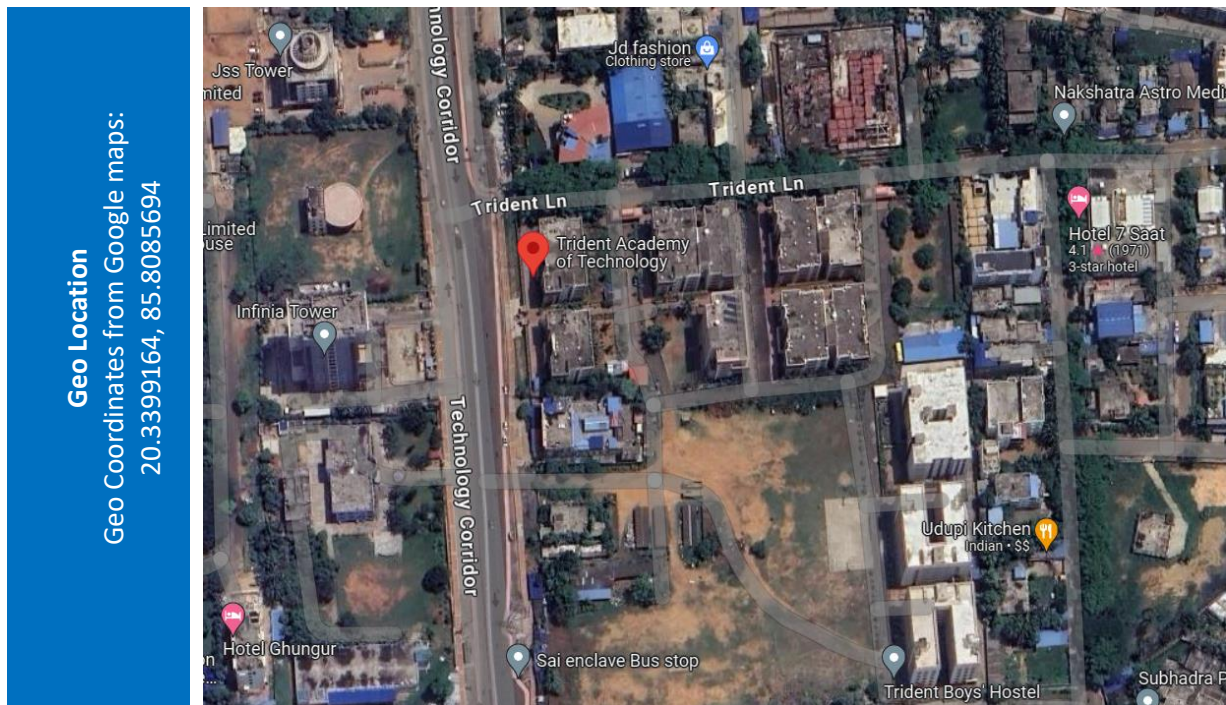
The centralized food court of Trident Group of Institutions providing round-the-clock breakfast, lunch and other refreshments and dinner. Separate canteen and cafeteria facilities are available for TAT and TACT. Whereas the TAT canteen serves South Indian Snacks and breakfast along with Oriya style lunch,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



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**Geo Location**

Geo Coordinates from Google maps:
20.3399164, 85.8085694

AUDIT PARTICIPANTS

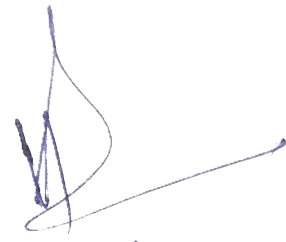
On behalf of College

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

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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

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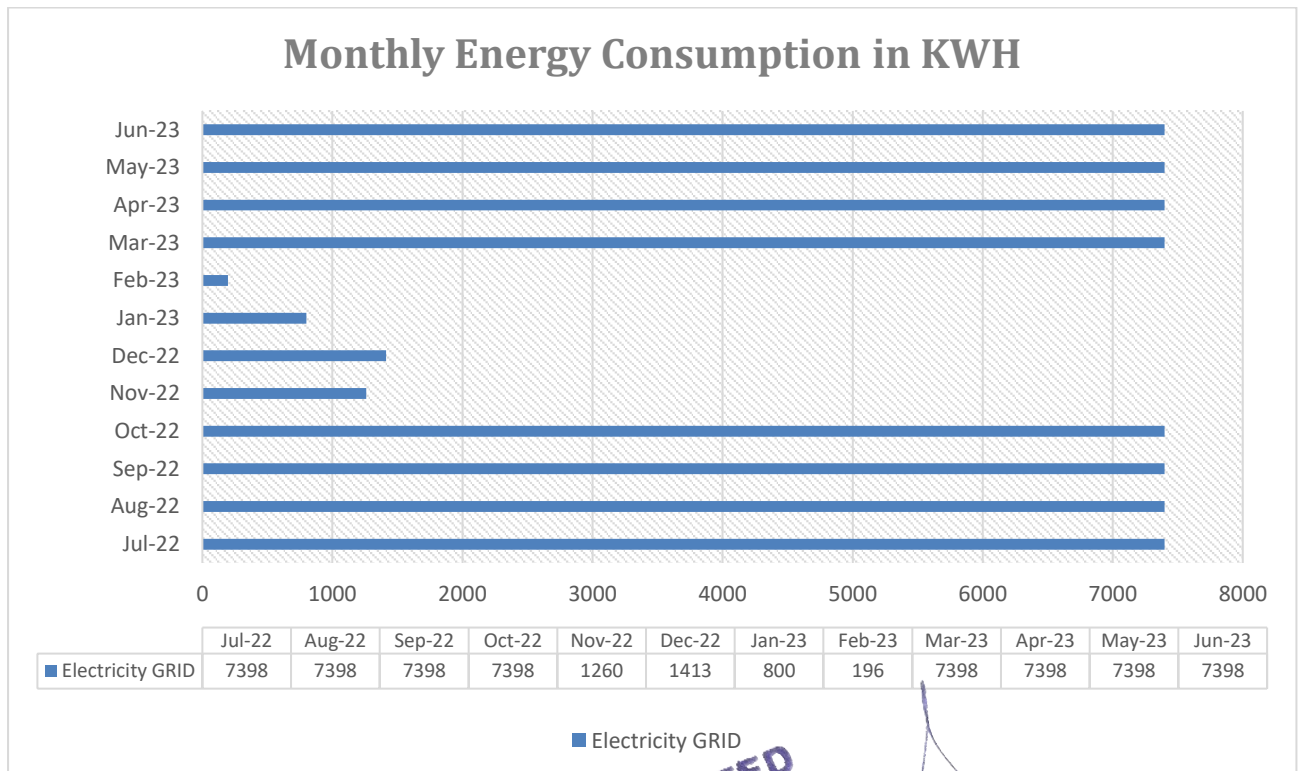
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1.1 Summary of Monthly Electricity Consumption and Total Bill Amount

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.



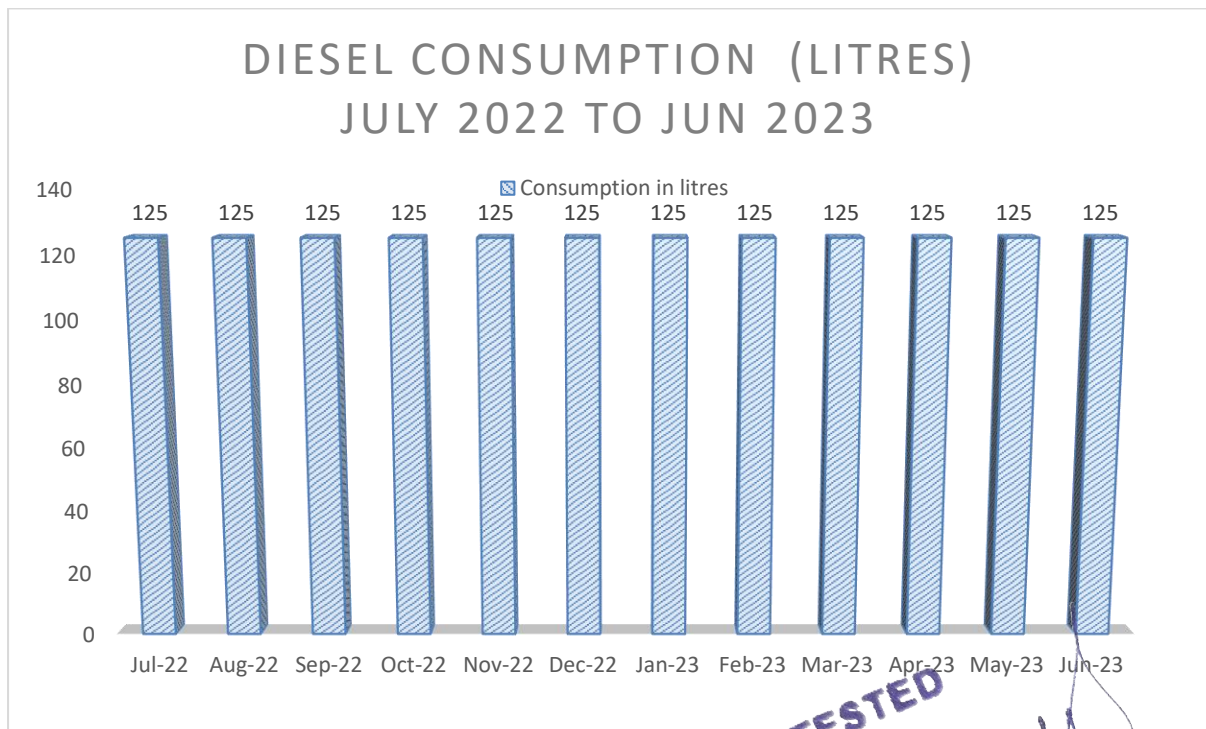
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2. DIESEL CONSUMPTION

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

Prepared by: EHS Alliance Services

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(Signature)
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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



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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 inverter-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.

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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.

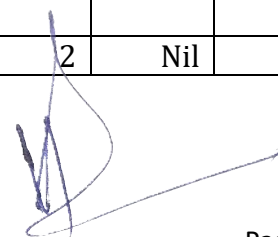
Table - Luminous Performance Characteristics of Commonly Used Luminaries					
Type of Lamp	Lumens/Watt		Colour Rendering Index	Typical Application	Typical Life
	Range	Avg			
Incandescent	8-18	14	Excellent (100)	Homes, restaurants, general lighting, emergency lighting	1000
Fluorescent lamps	46-60	50	Good w.r.t coating (67-77)	Offices, shops, hospitals, 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 lighting, stadium exhibition grounds, construction areas	2000 - 4000
High-pressure sodium (HPSV) SON	67-121	90	Fair (22)	General lighting in warehouses, factories, street lighting	6000 - 12000
Low-pressure sodium (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, etc.	40000 - 100000

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	

ATTESTED



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 *****

ATTESTED

(Signature)
Principal
Trident Academy of Technology
Bhubaneswar 751024



TRIDENT
ACADEMY OF
TECHNOLOGY



**TRIDENT ACADEMY OF
TECHNOLOGY**

ENVIRONMENT AUDIT REPORT

2022-2023

PREPARED BY
EHS ALLIANCE SERVICES

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AUDIT CERTIFICATE



CERTIFICATE

PRESENTED TO

TRIDENT ACADEMY OF TECHNOLOGY

F-2, Chandaka Industrial Estate In front of Infocity, Infocity
Chandrasekharpur, Bhubaneswar 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.



SIGNATURE



11.05-2023
DATE OF AUDIT

ACKNOWLEDGEMENT

EHS Alliance Services would like to thank the administration of Trident Academy Of Technology, Bhubaneswar, Odisha for assigning this important work of Environment 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 environmental performance of the campus.

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



DISCLAIMER

EHS Alliance Services Audit Team has prepared this report for Trident Academy Of Technology, Bhubaneswar, Odisha, based on input data submitted by the representatives of the College complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

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.

If you wish to distribute copies of this report external to your organisation, then all pages must be included.

EHS Alliance, its staff and agents shall keep confidential all information relating to your organisation and shall not disclose any such information to any third party, except that in the public domain or required by law or relevant accreditation bodies.

EHS Alliance staff, agents and accreditation bodies have signed individual confidentiality undertakings and will only receive confidential information on a 'need to know' basis.



Signature

LEAD AUDITOR

CONCEPT AND CONTEXT

In India, the process for environmental audit was first mentioned under the Environment Protection Act, 1986 by the Ministry of Environment of forests on 13th March 1992. As per this act, every person owning an industry or performing an operation or process needs a legal consent and must submit an environmental report or statement.

The National Assessment and Accreditation Council (NAAC), New Delhi 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. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the sustainable environment.

In view of the NAAC circular regarding environment auditing, the College administration decided to conduct an external environment assessment study by a competent external professional auditor.

The term ‘Environmental audit’ means differently to different people. Terms like ‘assessment’, ‘survey’ and ‘review’ are also used to describe similar activities. Furthermore, some organizations believe that an ‘environmental audit’ addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Environment Audit, many leading companies/institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (ICC) in its publication of Environmental Auditing (1989).

The ICC defines Environmental Auditing as:

“A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects.”

This audit focuses on the environment legal compliances and implementation of rules defined by MoEFCC or state pollution control board. The concepts, structure, objectives, methodology, tools of analysis, and objectives of the audit are discussed below.

INTRODUCTION

Nature is very precious gift for all life forms. Disturbance in the nature causes environmental problems. These are increasing day by day as a result of development of urbanization and industrialization on earth. Because of unplanned utilization of resources, our planet is facing tremendous pressure results a sharp rise in temperature. Therefore, there is an urgent need to plan the consumption of the resources in sustainable manner in order to conserve natural resources for future generation.

Sustainable development is becoming popular in the world for saving the earth. Utilizing resources judiciously can save the earth's precious resources. Measurement of environmental components is the most effective step to conserve and protect natural resources.

Environmental auditing had begun in the early 1970s with provision of civil lawsuits for non-compliance with environmental regulations. Environment auditing involves on site visit, collection of samples, performing analyses, and report results to competent authorities.

Industry, the corporate world is initiating auditing for saving natural resources. Academic institutions also can contribute to the preservation and conservation of resources within their premises.

This "Environment Audit" report would help everyone to think about preserving resources, show willingness to learn their importance, adopt steps to minimize resource use and set an example for others to follow the path of eco-friendly practices to achieve the goal of sustainable development. Effective implementation of environmental auditing helps in minimization of environmental risks at low cost.



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.



Trident is passionate about grooming leaders who are not only thorough professionals but also are good human beings with values and “sanskars”. Emphasis is given not only on making the students academically brilliant, but grooming them as true leaders and team players, thus preparing them for real life corporate world. The college has been ranked at No.25 in recently concluded DATAQUEST CMR RANKINGS.

In the recently concluded local rankings for BTech, MCA, MBA colleges (Under Biju Patnaik University of Technology, Odisha) and BCA and BBA institutions (Under Utkal University, Odisha), the Trident colleges have got the following ranks.

- No.1 MCA institution status for Trident Academy of Creative Technology, Bhubaneswar.
- No.1 Biotechnology college of Utkal University for the School of Biotech Sciences, Trident Academy of Creative Technology, Bhubaneswar.
- No.2 BCA /BBA college status under Utkal University for the School of undergraduate studies, Trident Academy of Creative Technology, Bhubaneswar.
- No.4 Private Engineering College status under Biju Patnaik University of Technology, Odisha for Trident Academy of Technology, Bhubaneswar.

VISION

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

MISSION

- To foster holistic excellence in the new generation of students.
- To instill in them, the power of aggressive positive thinking, insatiable desire for information and knowledge, a penchant for out-of-the box ideation and capacity of execution.
- To contribute to the society with honesty and integrity through innovative research in the multi-disciplinary areas of evolving and upcoming technologies.

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

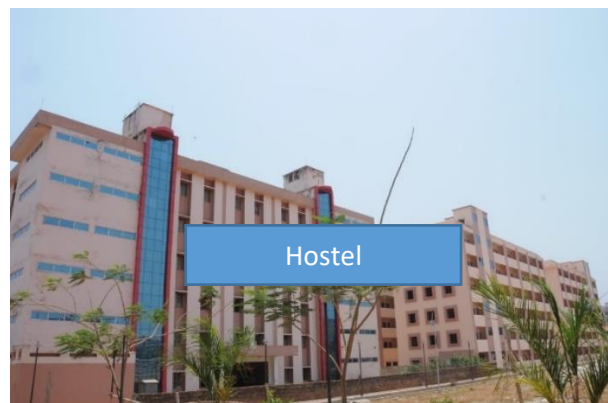
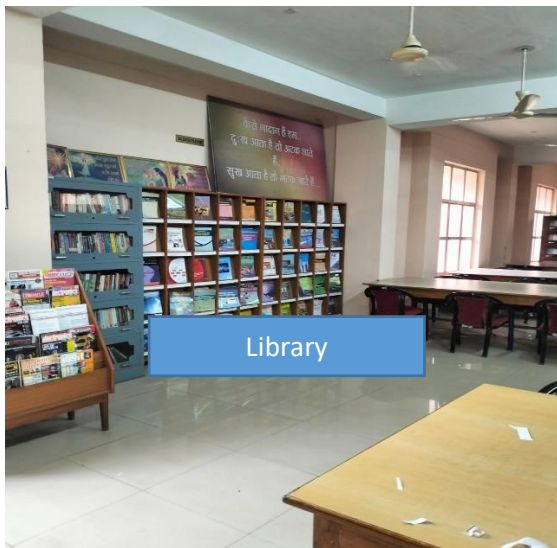
The college has outsourced the transport facility, A dedicated fleet of buses has been provided by the operator and these buses ply in five different routes picking up students from designated bus stops across the city. The present arrangement of routes can be viewed by clicking here.

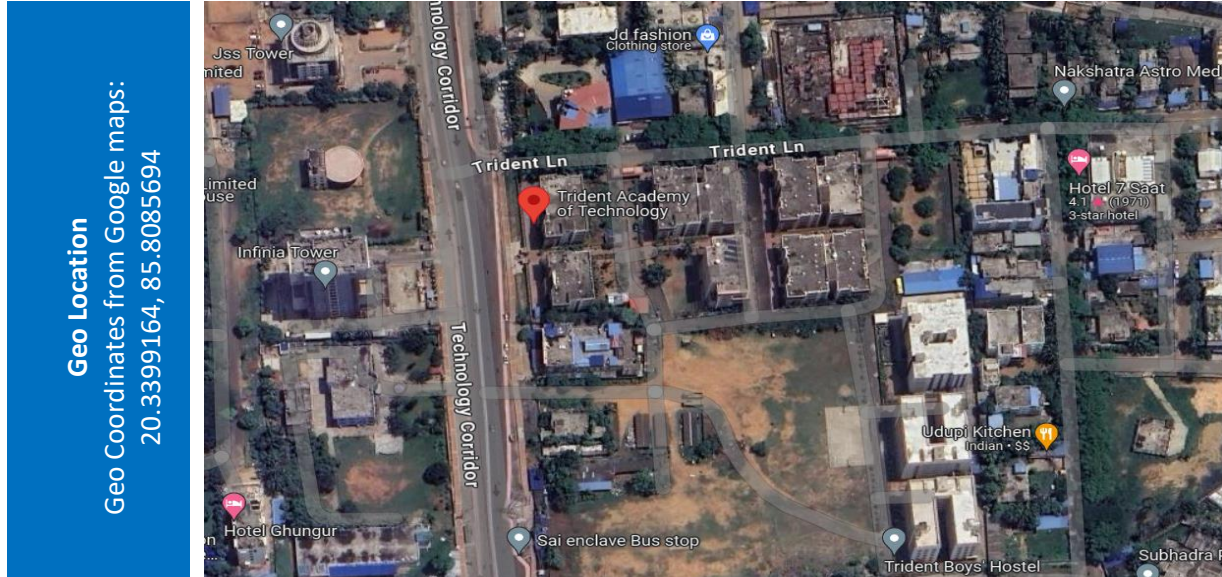
HOSTEL

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.





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

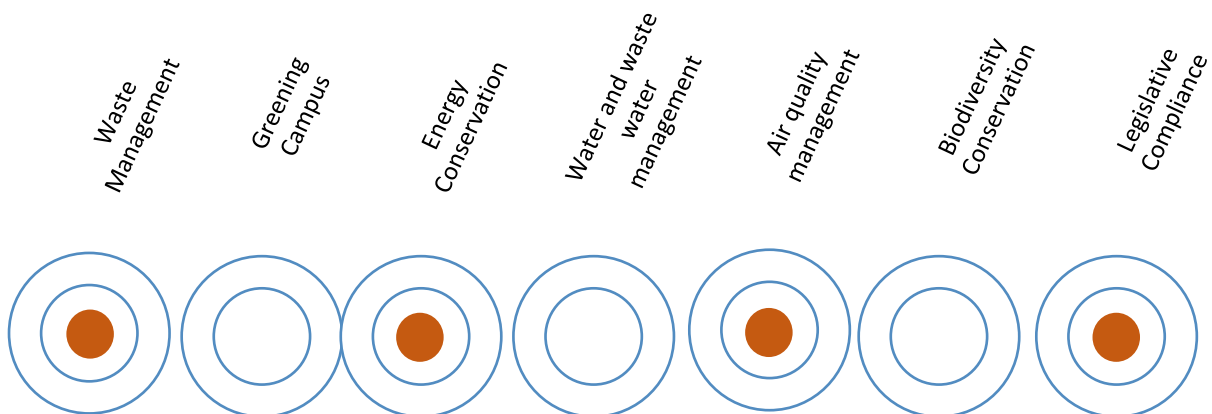
Name	Position	Qualifications
Dr. Uday Pratap	Lead Auditor	Ph.D. , PDIS, QCI – WASH, Lead Auditor ISO 14001:2015
Ms. Pooja Kaushik	Co-Auditor	M.Sc., Field Expert, QCI – WASH

EXECUTIVE SUMMARY

The environment audit is a snapshot in time, in which one assesses campus performance in complying with applicable environmental laws and regulations. Though a helpful benchmark, the audit almost immediately becomes out-dated unless there is some mechanism in place to continue the effort of monitoring environmental compliance. Our approach to promote a Green Campus to inculcate the sustainable value systems among the students, so that they carry the learning and practices them in their future endeavours. This will ensure that Sustainability and Environmental practices get embedded in all the institutions and organizations in the country.

A Green Campus is a place where environment friendly practices and education combine to promote sustainability in the campus which ultimately offers an institution the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind.

This is very first environment audit of College for doing their bit towards environmental protection and environmental awareness at local and global front. Audit criterion is environmental cognizance, waste minimization and management, biodiversity conservation, water conservation, energy conservation and environmental legislative compliance by the campus. A questionnaire is used during audit. This audit report contains observations and recommendations for improvement of environmental consciousness.



WASTE MANAGEMENT

TYPES OF WASTE ON COLLEGE CAMPUS

To create effective waste management plans, college first need to know the types of waste they produce. Below, we have compiled a list of various kinds of waste commonly generated on institutional campus:

1. **Food Waste** - The reasons for food waste on an educational campus may be over purchasing food to ensure a sufficient supply and then throwing it away, especially in all hostel messes where plentiful stores are essential. And in the cafeteria or hostel mess, students may pile food onto their empty trays, find it unappealing once they sit down and dutifully scrape it into the garbage. Immediate attention is given to the food waste minimization techniques.
2. **Recyclable Paper, Cardboard, Plastic, Glass and Cans** -Campus tends to produce vast quantities of these recyclables. Even in the digital age, many students, professors and staff members still prefer handwritten notes and end up with piles of unwanted paper once their courses and projects are complete. The snacks so essential to late-night studying or socializing tend to come in recyclable plastic, glass or aluminium containers. And shipments of necessary items throughout the year are likely to arrive in recyclable plastic and cardboard packaging. Quantitative analysis should be carried out to reduce waste in coming academic sessions.
3. **Student Clothes and Housewares** - As we have mentioned above, many students find it more convenient to throw away their clothes and dorm furnishings at the end of the year than donate or recycle them. College has adopted a donation camp in summer and winter season to help needful people with the available old books and old clothes.
4. **E – Waste - Student and facility electronics often form a large portion of a campus’s waste** — As campus continually upgrade their computing facilities and office computers to keep up with the latest technology, the old computers have to go somewhere. So do old printers, phones, copy machines and other electronics that receive upgrades over the years. Discarded student electronics often become part of a college’s waste stream as well. Students may throw away old phones, TVs, tablets, laptops and printers, along with cords and other accessories. Recycling is a much more eco-friendly option — the metals in old electronics often have a high reuse value. College has tie-up with external authorised agency details mentioned in legislation compliances.
5. **Chemical Waste** - Chemical waste on a college campus may come from numerous sources. Campus laboratories generate waste chemicals, as do cleaning services. The detergents used in campus laundry rooms eventually become waste as well. Much of these chemical substances are hazardous waste under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and must undergo specific disposal processes according to state environmental rules and regulations.

6. **Maintenance Waste** - In the maintenance department, spent paints, solvents, adhesives and lubricants all form potentially hazardous waste. Because they are difficult to recycle, spent incandescent light bulbs usually become landfill waste. Spent fluorescent light bulbs, which contain small amounts of mercury, typically require special handling because of the environmental and health risks they pose.
7. **Biological Waste** - Biological waste from laboratories will require special handling and disposal as per BMW Rules, 2016. Tissue from biology biological waste, as do tissue samples, contaminated bandages and used sharps from medical facilities.
8. **Furniture** - Furniture waste on a college campus has a couple different sources. The campus itself may also get rid of old furniture as it modernizes its classrooms, cafeterias, computer labs and study spaces. Annually sold to junk dealer.
9. **Books/Magazines/Newspapers** - Books accounted for solid waste generation and college often generate tons of textbook waste. As courses upgrade to new editions, they may end up throwing their newly obsolete textbooks into the garbage if donation programs cannot use them. Students, too, may find it more convenient merely to throw away their books at the end of the year rather than donating or reselling them.
10. **C & D Waste** - Due to expansion of college campus building and renovation works result significant amount of construction and demolition waste that should be either used for back filling or disposed-off through authorised dumping site by CPCB/SPCB.
11. **Solid Waste** - The College is managing solid waste by its own through waste treatment plant.
12. **Horticulture Waste** – College campus has lavish greenery and grounds that results significant horticulture waste which is managed by in-house composting system.

ENERGY CONSERVATION

1. **List ten ways that you use energy in your institute. (Electricity, LPG, firewood, others). Using this list, try to think of ways that you could use less energy every day.**

- Solar power plant of capacity 12 kW installed to save electricity
- Electricity saves by use of LED bulbs for illumination
- LPG saves by use of Pressure cookers for cooking food.

2. **Are there any energy saving methods employed in your institute? If yes, please specify. If no, suggest some**

Yes

- Switching off the lights and Fans of the classroom after the class is vacant
- Use of BEE rated Appliances such as ACs, Refrigerators, Water Purifier cum Cooler etc.
- The lights and Fans in classroom are arranged in such a manner that during 50% of load the entire classroom can have proper illumination and air comfort.
- All Hostels and some classrooms CFL lights are being replaced with LED lights
- 40% Air conditioning system are replaced with VRF Air Conditioner

3. How many CFL/LED bulbs has your institute installed?

Approximate 30 % of Total Conventional bulbs and tube lights are replaced by LED/CFL Lights.

4. Do you run “switch off” drills at institute?

No

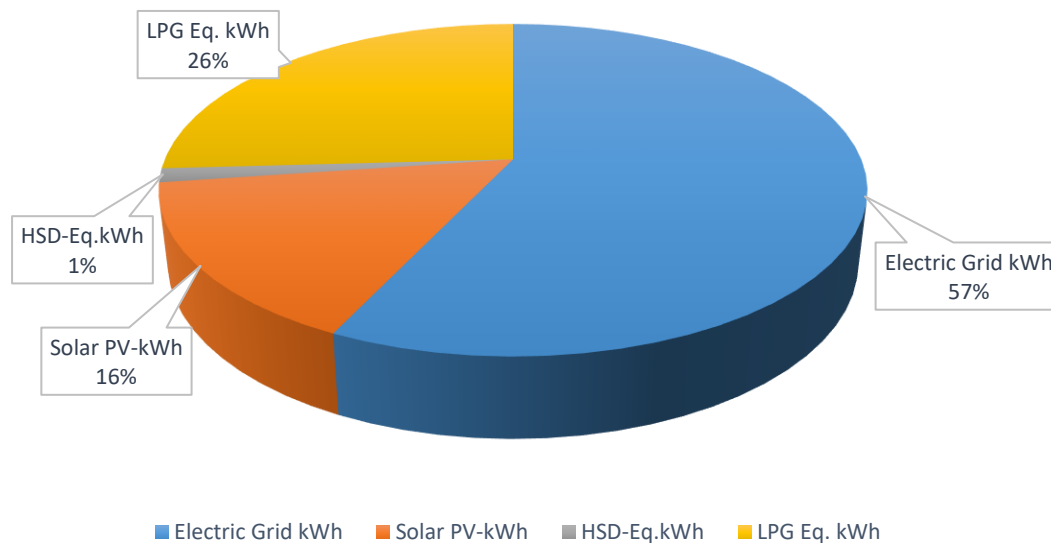
5. Are your computers and other equipment’s put on power-saving mode?

Yes, In Practice

6. Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?

Yes, approx. 6 hours

Energy Share in KWH



Energy Share	kWh	Percentage
Electric Grid kWh	62853	57.07%
Solar PV-kWh	17280	15.69%
HSD-Eq. kWh	1500	1.36%
LPG Eq. kWh	28500	25.88%
Total -kWh	110133	100%

WATER AND WASTE-WATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:

Drinking – 77.52 KL/month

Gardening – 216 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 Technique:

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 and Exit)

Entry - Water comes from borewells.

Exit- From Canteen, Toilets, bathrooms, laboratories 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:

- Close the taps after usage
- Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage

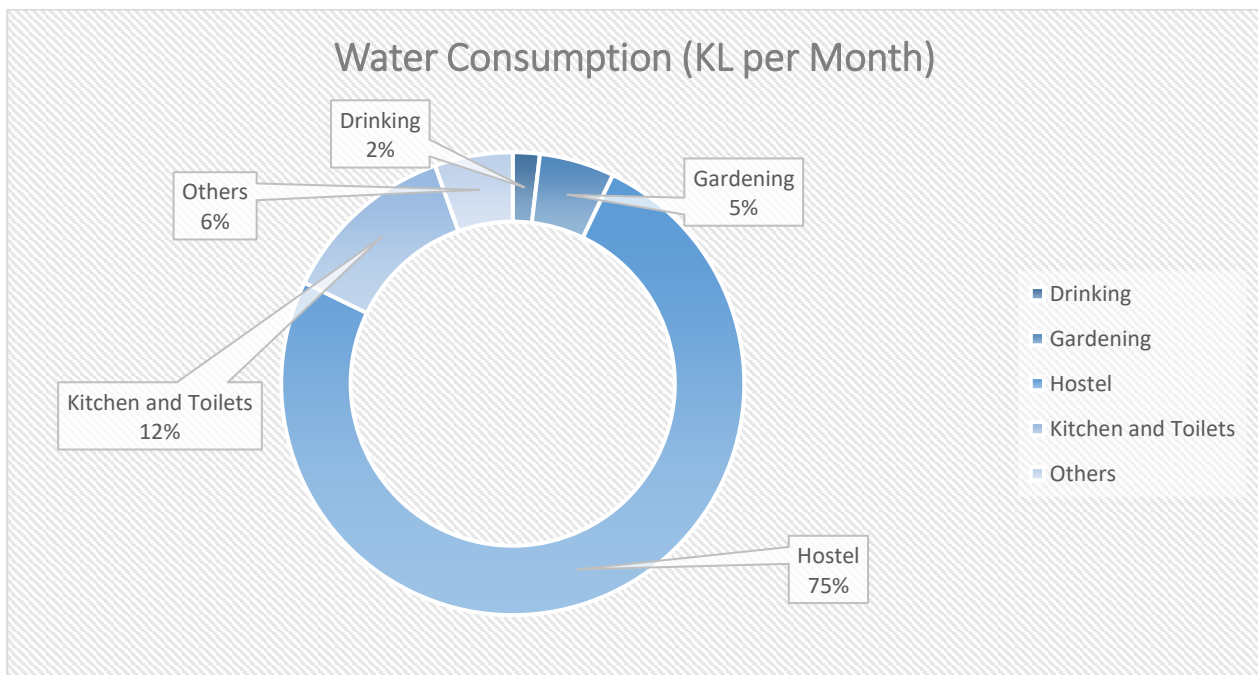
5. Does your institute harvest rainwater?

Yes,

6. Is there any water recycling System?

Yes, college has installed STP (100 KLD).

Uses of Water	KL per Month
Drinking	77.52
Gardening	216.00
Hostel	3094.20
Kitchen and Toilets	509.88
Others	224.40
Total	4122.01



AIR QUALITY MANAGEMENT

1. Are the Rooms in Campus Well Ventilated?

Yes, as per National Building Code, guidelines

2. Window Floor ratio of the Rooms?

Very Good, ample daylight utilization because of big windows.

3. What is the ownership of the vehicles used by your campus?

College-owned & contractual vehicles only

4. Provide details of College-owned vehicles?

Bus – 15
Car – 9
Total – 24

5. PUC done?

Yes

6. Specify the type of fuel used by your campus's vehicles

All Buses and 7 cars operates on diesel and 2 cars are EV cars.

8. Air Quality Monitoring Program (If, Any)

No

ENVIRONMENT LEGISLATIVE COMPLIANCE

1. Are you aware of any environmental Laws Pertaining to different aspects of environmental management?

Yes, faculty members & administrative team is well aware of national environmental laws.

2. Does your institute have any rules to protect the environment? List possible rules you could include.

Yes, initiatives are being taken by college to reduce pollution and go green.

3. Does Environmental Ambient Air Quality Monitoring conducted by the Institute?

No

4. Does Environmental Water and Wastewater Quality monitoring conducted by the Institute?

No

5. Does stack monitoring of DG sets conducted by the Institute?

Periodical Inspection by Electrical Inspector by Energy

6. Is any warning notice, letter issued by state government bodies?

No

7. Does any Hazardous waste generate by the Institute?

No

GENERAL INFORMATION

1. Does your institute have any rules to protect the environment? List possible rules you could include.

1. Ban on single use plastic
2. Save and plant trees
3. Generate as less waste as possible
4. Commute with bicycle once a week
5. Save water and energy

2. Are students and faculties aware of environmental cleanliness ways? If Yes Explain

Yes, various awareness campaigns like plantation, energy conservation, pollution reduction campaigns carried out by college

E-Abhiyan Project in association with CISCO

Plantation Drive in association with Halchal Youth Club

Blood Donation Camp in association with the NGO 'Ama Odisha'

Socio-economic surveys in association with SPARC

3. Does Important Days Like World Environment Day, Earth Day, and Ozone Day etc. eminent in Campus?

Yes, World Environment Day, Ozone Day, Earth Day and more are celebrated by campus.

4. Does Institute participate in National and Local Environmental Protection Movement?

Yes, Swachh Bharat Abhiyan by students at campus

5. Does Institute have any Recognition or certification for environment friendliness?

No

7. Does Institution conduct a green or environmental audit of its campus?

This is the first external audit carried out by the college.

8. Has the institution been audited /accredited by any other agency such as NABL, NABET, TQPM, NAAC etc.?

College is NAAC accredited with B⁺

RECOMMENDATIONS

- Provide sanitary waste disposal facility as per the CPCB guidelines for management of sanitary waste (as per Solid Waste Management Rules, 2016). Installation of Incinerator is recommended in campus
- Environmental Monitoring i.e. (Ambient Air Quality monitoring, Stack Monitoring of DG sets, Water monitoring need to be conducted by State Pollution Control Committee, approved laboratory) should be conducted periodically.
- Environmental parameters should be included in purchase policy to achieve cradle to grave approach for sustainability.
- Agreement with third party authorised vendors should be done for different types of waste management, such as paper recycling, e-waste, BMW, Plastic waste, etc.
- Eco-friendly parameters should be included in the purchase of articles and goods for the campus.
- College should run Conservation awareness campaigns like online sessions and webinars for students and staff.
- Green building guidelines with ECBC compliance should be adopted for future expansion projects of the College.
- Borewell permission should be taken from CGWA.

CONCLUSION

This audit involved extensive consultation with all the campus team, interactions with key personnel on wide range of issues related to environmental aspects. Overall 30% of College campus is for landscaping. The audit has identified some observations for making the campus premise more environment friendly. The recommendations are also mentioned with observations for College campus team to initiate actions. The audit team opines that the overall site is well-maintained from environmental perspective. Still there are few things that are important to initiate urgently which includes installation of incinerator, construction of rain water storage tanks, and borewell permission and periodic inspection of buildings to increase the energy efficiency.

REFERENCES

- **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 – CERTIFICATES & COMPLIANCE



Certificate of Appreciation

This is to certify that

TRIDENT ACADEMY

Has contributed in
Shramdaan for Swachh Bharat
On
1st October, 2023, at 10 AM

A Swachh Bharat Mission Initiative

ANNEXURE II - PHOTOGRAPHS



Well ventilated building structure



Well maintained campus



Plantation drive on occasion of Environment Day



Cleanliness Drive



10 kWp Solar Plant



TAT in media



Cassette ACs for power saving



Diesel generator



100 kLD STP plant



International Water Day
Celebration



Swachhata Abhiyan by
Students



Nature coservation message
display

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



BILL OF SUPPLY

Invoice No.: WCS/21-22/29 ✓
 Invoice Date: 10/07/2021
 Order No.:
 Order Date:

Water Care Systems

RP/11, Pandav Nagar, Tankapani Road, Bhubaneswar-751018,
 Phone-09437001807, 08908238307. Email: mywatercaresystems@yahoo.co.in.
 GSTIN: 21AHTPD8427E1ZG PAN: AHTPD8427E

Bill To Party

Trident Academy of Technology
 F-2, Chandaka Industrial Estate
 In front of Infocity, Infocity
 Chandrasekharpur, Bhubaneswar
 Odisha - 751024

Ship To Party

Trident Academy of Technology
 F-2, Chandaka Industrial Estate
 In front of Infocity, Infocity
 Chandrasekharpur, Bhubaneswar
 Odisha - 751024

Sr.	Description of Goods	HSN Code	QTY	UOM	Rate In INR	Amount In INR	Value of supply in INR
1	Sewage Treatment Plant consists of following equipments Air Blower -(A1-44)Model with 5 HP motor-2 Nos., Kirloskar Pump(SP1HM-3P) - 2 Nos. Sludge Pump(Kirloskar SPOM, 3P)- 1 No., MBBR Media- 5 m3, Tube pack media- 5 m3, Fine Bubble Diffuser- 20 Nos., Coarse Bubble Diffuser-10 Nos, FRP pressure vessel 3072-4" T/B -2 Nos., Hub with Laterals(GP-430-63)-2 Nos., Strainer with basket-2 Nos., 50 NB SM MPV - 2 Nos., Dosing Pump- 1 No., Electrical Panel-1 No., Pipes & Pipe fittings- 1 Lot	8421	1	Set.	10,69,000	10,69,000	10,69,000
TOTAL							Rs. 10,69,000

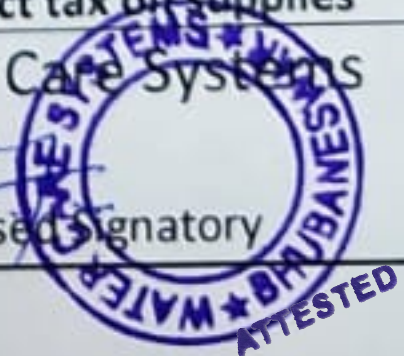
21382
 33035
 22.11.21

Total Invoice Value (In Words): Rupees Ten Lakh Sixty Nine Thousand only

Declaration:- "Composition taxable person, not eligible to collect tax on supplies"

For Water Care Systems

Authorised Signatory



Handwritten signature and date: 10/7/21

Principal
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 Bhubaneswar-751024



ଓଡ଼ିଶା ସରକାର

GOVERNMENT OF ODISHA

OFFICE OF THE ADDITIONAL CHIEF ENGINEER-CUM-ELECTRICAL INSPECTOR, BHUBANESWAR
AT-PLOT NO. GD 2/7, MAITRI VIHAR, C.S.PUR, BHUBANESWAR -23
TELEPHONE NO. 2300287, EMAIL -EIBBSR-OD@GOV.IN

INITIAL INSPECTION REPORT ON ROOF-TOP SOLAR PV POWER PLANT INSTALLATION

1.	Report No.	556/ 2021-22
2.	Online Application No	10/02/2022
3.	Date of inspection	INELEIN/2025/00911
4.	Inspection fees paid	Rs. 43,875.00, T.C. No. ZHD5LCW0CFQ8SJ, Dt. 06-02-2025.
5.	Reference	This inspection is based on relevant documents submitted by the owner/Authorized person through online edistrict portal .
6.	Voltage and system of supply	3 Phase and neutral 415 Volt , 50 Hz.
7.	Name & address of the owner	M/s Dinabadhu Foundation, At-Plot No-F-2/A1, Chandaka Industrial Estate, Bhubaneswar.
8.	Location of Electrical Installation	At- Plot No-F-2/A1, Chandaka Industrial Estate, Bhubaneswar.
9.	Purpose of Installation	Solar Plant at Trident College.
10.	Inspection Conducted by	Er. Hrushikesh Meher, A.C.E-Cum-Electrical Inspector, Bhubaneswar
11.	Official documents verified by	Sri Simanchala Sarab, Section Officer. Sri Pradipta Kishore Padihari, Electrician Gr-II.
12.	Name of the Executing Agency/Contractor	M/s. Genesis Engineering, E.C.L. No.3589 (HT).
13.	Persons Present	Sri Debabratta Mishra, Electrical Contractor.
14.	Particulars of the installations	Total Load -235 KW Inverter - 125 KW X 1 No 60 KW X 2 Nos

15. Defects and Deficiencies noticed during Inspection & Corrective/Remedial measures to be taken:

A. SOLAR PV INSTALLATIONS.

1. All Panels are to be doubly earthed with indication of voltage level. The hindged doors are to be earthed.
2. Gland packing is to be provided at cable entry to the panel.
3. Aluminum material should not be placed with direct contact with concrete and those are to be insulated at the contact point.
4. Connectors are listed for the voltage of the system and have appropriate temperature and ampere ratings.
5. Disconnects and overcurrent protection are to be installed for all undergrounded conductors in undergrounded PV power systems.
6. The Earthing of all PV modules mounting structure shall be checked and ensured.
7. PV Modules structure tightness and installation shall be checked and ensured.
8. Inverter control panels and HT panels are to be identified properly and earthed properly.
9. All interior and exterior DC conduit, enclosures, raceways, cable assemblies, junction boxes, combiner boxes and disconnects are to be marked.
10. Warning marking i.e. PHOTO VOLTAIC POWER SOLAR PV are to be marked on red background.
11. Rooftop mounted PV panels and modules should have proper fire classification rating.
12. Adequate nos of lightning arrestors shall be installed to cover the P.V modules under protection zone.
13. Panel board shall be barricaded.

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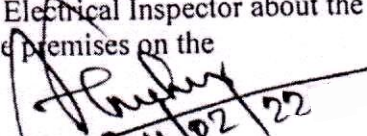
H. Meher
11/02/22

3. GENERAL & SAFETY PROVISIONS:

1. Only E.L.B.O. approved persons with required Workman Permit License are to be engaged for operation & maintenance work of the solar electrical installation. The list of such persons should be submitted to this office for reference and record.
2. The electric shock treatment chart written in Odia & English / Hindi should be displayed in conspicuous places.
3. Fire buckets filled with clean and dry sand and fire extinguishers suitable for electric fire should be provided at vital locations for use in case of fire hazards.
4. First Aid Box with medicines to be kept in the Control Room.

C. REMARKS


1. The Roof-top Solar PV power plant installation / equipments / accessories covered in this inspection report are to be enersised subject to rectification of defects and deficiencies. The compliance report to be furnished with in one month of issue of this report to this office for further necessary action.
2. Energy Meter & CT to be tested at TPCODL MRT laboratory & test report to be submitted to this office after testing .
3. It is the responsibility of the owner of the installation to inform the Electrical Inspector about the date of charging of the solar panel and to facilitate conveyance to attend the premises on the


11/02/22

**Additional Chief Engineer
-Cum- Electrical Inspector, Bhubaneswar**

1. Copy to M/s Dinabadhu Foundation, At-Plot No-F-2/A1, Chandaka Industrial Estate, Bhubaneswar for information and necessary action.
2. Copy to the Executive Engineer (Elect.), BCDD-II, BBSR, TPCODL for information and necessary action.
3. Copy to the Guard file.

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出厂检验报告

Test Report

产品名称 Product	逆变器 Inverter	产品型号 Model	R125-G2	产品序列号 Serial No.	60RF124046JC003
测试项目/Test Items					检测结果/Test Result
工频耐受电压 Hi-Pot Test					合格 Pass
接地阻抗测试 Grounding Impedance Test					合格 Pass
DC 开机电压 DC Start UP Voltage					合格 Pass
自动开关机 Automatic switch machine					合格 Pass
软启动 Soft start					合格 Pass
恢复并网 Restore the grid-tied					合格 Pass
直流分量 DC Offset					合格 Pass
额定输入输出 Rated input and output					合格 Pass
谐波和波形畸变 THDi					合格 Pass
功率因数 Power Factor					合格 Pass
输出功率 Output Power					合格 Pass
转换效率 Efficiency					合格 Pass
AC 输出过压保护 AC Over Voltage Protection					合格 Pass
AC 输出欠压保护 AC Under Voltage Protection					合格 Pass
AC 输出过频保护 AC Over Frequency Protection					合格 Pass
AC 输出欠频保护 AC Under Frequency Protection					合格 Pass
DC 过压保护 DC Over Voltage Protection					合格 Pass
DC 欠压保护 DC Under Voltage Protection					合格 Pass
通讯测试 Communication Test					合格 Pass
恢复出厂设置 Reset					合格 Pass
气密性测试 IP65 Test					合格 Pass
外观及结构检查, 附件包、背板等检查					合格 Pass

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Test Report

Manufacturer: Inverter

Model: SUN-60K-G03

Test date: 2022-4-6

Ambient temperature: 25°C



SN: 2404034593

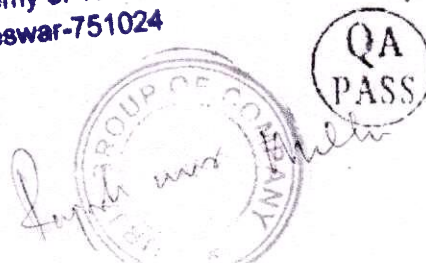
Test item	Specifications	Test Result
Hi-pot	DC 3000V <10MA	Pass
Lightning performance test		Pass
Check SN		Pass
F/W COM		Pass
F/W MCU		Pass
Vpv(V) Accuracy	<2%	Pass
Ipv(A) Accuracy	<3%	Pass
Ppv(W) Accuracy	<2%	Pass
Vac(V) Accuracy	<2%	Pass
Fac(Hz) Accuracy	<0.1%	Pass
Iac(A) Accuracy	<3%	Pass
Pac(W) Accuracy	<2%	Pass
Efficiency(%)	>96	Pass
Power Factor	>0.99	Pass
THDI(%)	<3	Pass
Anti-islanding detection		Pass
Over-frequent test(Hz)	>51.5	Pass
Under-frequent test(Hz)	<47.5	Pass
Over voltage test(V)	>460	Pass
Under voltage test(V)	<320	Pass
LCD Display Check		Pass
Factory Reset		Pass
Air Flow test		<input checked="" type="checkbox"/> Pass / <input type="checkbox"/> Fail
Appearance Check		<input checked="" type="checkbox"/> Pass / <input type="checkbox"/> Fail
Accessories Check		<input checked="" type="checkbox"/> Pass / <input type="checkbox"/> Fail

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Result: PASS



Test Report

Manufacturer: Inverter
Model: SUN- 60 K-G03
Test date: 2022-5-14
Ambient temperature: 25°C



SN: 2405102020

Test item	Specifications	Test Result
Hi-pot	DC 3000V <10MA	Pass
Lightning performance test		Pass
Check SN		Pass
F/W COM		Pass
F/W MCU		Pass
Vpv(V) Accuracy	<2%	Pass
Ipv(A) Accuracy	<3%	Pass
Ppv(W) Accuracy	<2%	Pass
Vac(V) Accuracy	<2%	Pass
Fac(Hz) Accuracy	<0.1%	Pass
Iac(A) Accuracy	<3%	Pass
Pac(W) Accuracy	<2%	Pass
Efficiency(%)	>96	Pass
Power Factor	>0.99	Pass
THDI(%)	<3	Pass
Anti-islanding detection		Pass
Over-frequent test(Hz)	>51.5	Pass
Under-frequent test(Hz)	<47.5	Pass
Over voltage test(V)	>460	Pass
Under voltage test(V)	<320	Pass
LCD Display Check		Pass
Factory Reset		Pass
Air Flow test		<input checked="" type="checkbox"/> Pass / <input type="checkbox"/> Fail
Appearance Check		<input checked="" type="checkbox"/> Pass / <input type="checkbox"/> Fail
Accessories Check		<input checked="" type="checkbox"/> Pass / <input type="checkbox"/> Fail

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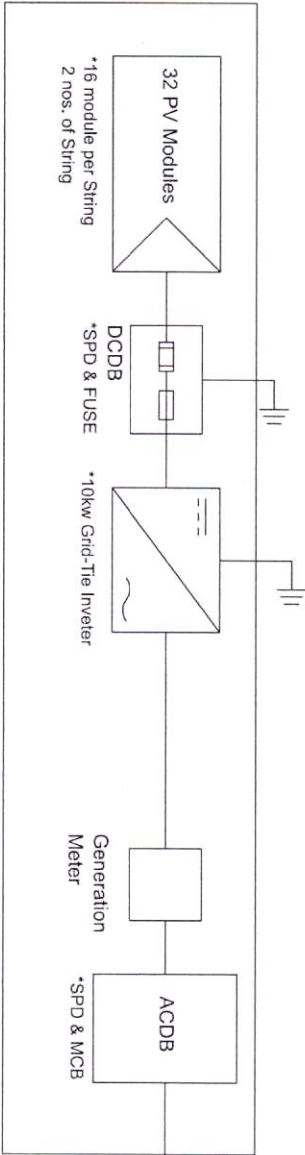
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Result: PASS

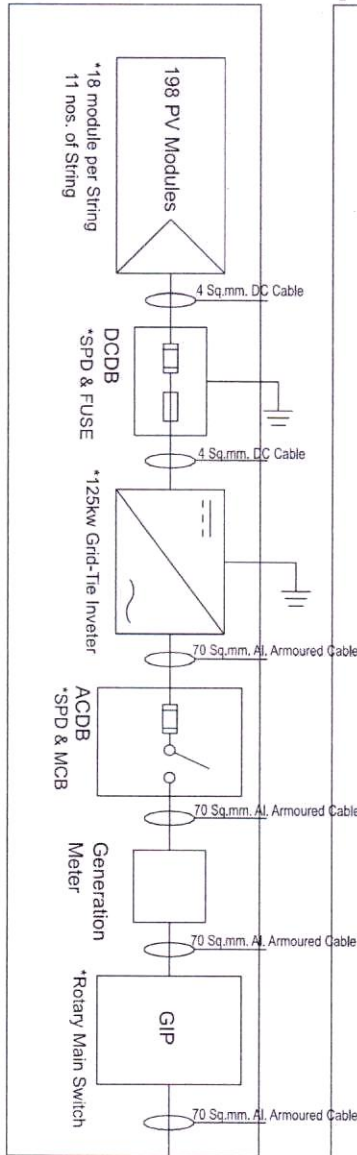


Single-Line Diagram of 235 Kw Grid-Tied Solar PV System for TRIDENT ACADEMY OF TECHNOLOGY

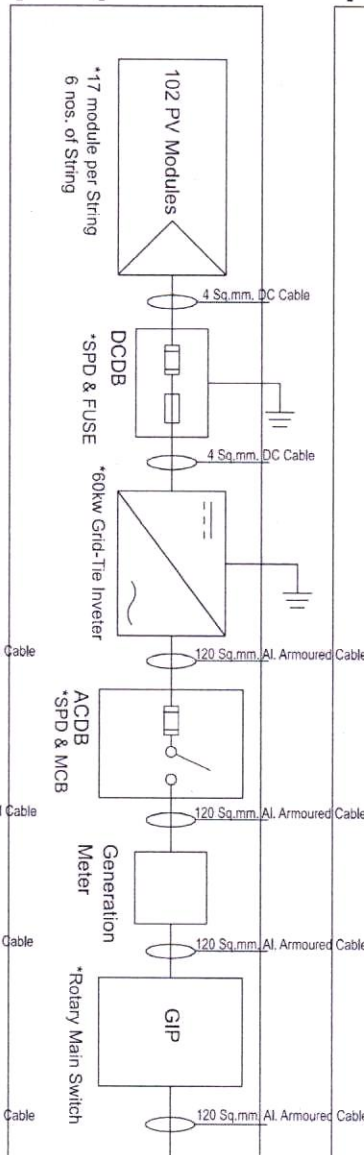
BLOCK-5
[10Kw]



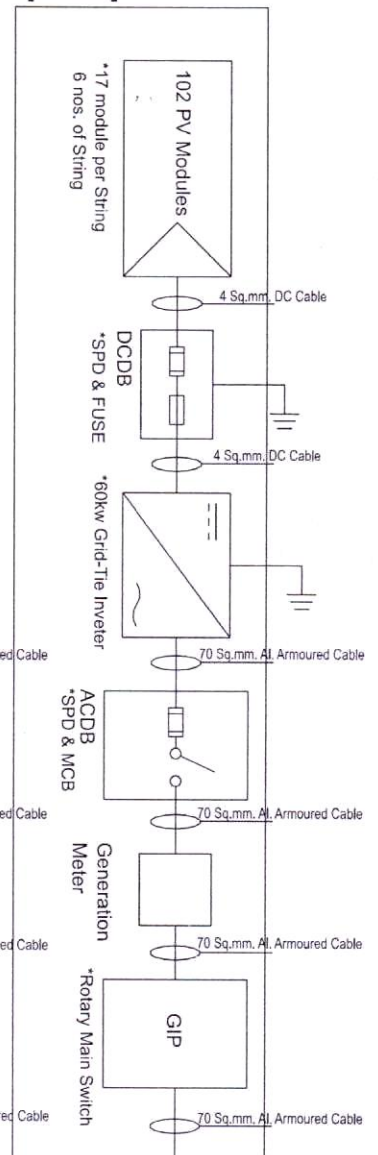
GIRLS HOSTEL
[115Kw]



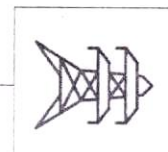
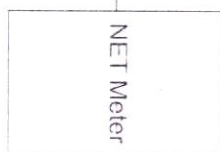
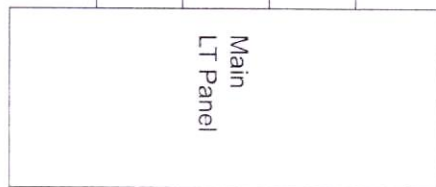
BOYS HOSTEL-2
[60Kw]



BOYS HOSTEL-1
[60Kw]



[Registered Connection]



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TECHNICAL DATA

ELECTRICAL PERFORMANCE [Note: Power tolerance: 0 - +4.99 W. Power measurement uncertainty: < ±3%. Average value of NOCT: 45.08 ± 2 °C]

ELECTRICAL CHARACTERISTICS*

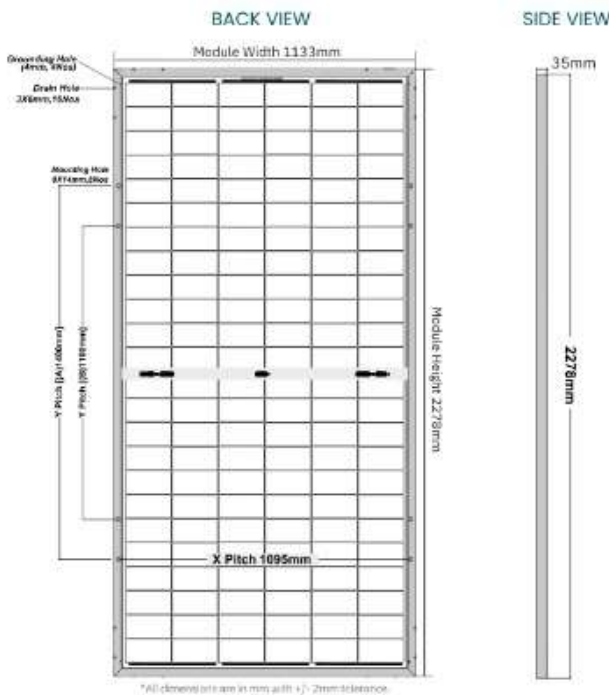
RS580144TGC
STC

Nominal Maximum Power (Pmax)	580 W
Optimum Operating Voltage (Vmp)	44.75 V
Optimum Operating Current (Imp)	12.97 A
Open Circuit Voltage (Voc)	52.80 V
Short Circuit Current (Isc)	13.65 A
Module Efficiency	22.47 %

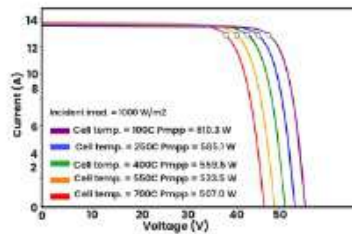
BIFACIAL OUTPUT - BACKSIDE POWER GAIN @ STC* [Bifacially Factor: 80% ± 10%]

[Note: The bifacial gain depends on the power plant design and site conditions. Electrical component ratings should be selected as per actual Bifacial gain at site (module currents indicated below)]

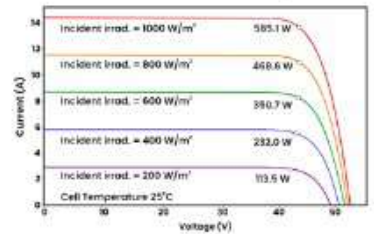
5%	Nominal Maximum Power (Pmax)	609 W
	Module Short Circuit Current / Efficiency	14.33 A / 23.60 %
10%	Nominal Maximum Power (Pmax)	638 W
	Module Short Circuit Current / Efficiency	15.02 A / 24.72 %
25%	Nominal Maximum Power (Pmax)	725 W
	Module Short Circuit Current / Efficiency	17.06 A / 28.09 %



IV Curve Variation with Irradiance

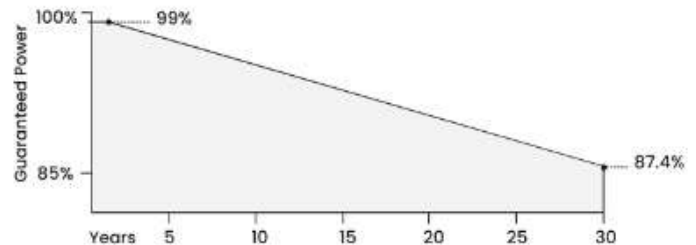


IV Curve Variation with Temperature



IV Curves for Front-Side Illumination of 585 Wp Panel

LINEAR PERFORMANCE WARRANTY



MECHANICAL SPECIFICATIONS

Dimensions	2278(L) x 1133(W) x 35(T)
Weight(kg)	33
Cell type / No Of Cell	144 Half-cut N-type TOPCon Bifacial Solar cells
Frame	Anodized Aluminum Alloy (6005, Temper T6, Silver colour)
Front Cover	Low Iron semi-Tempered AR coated Glass (2 mm thick)
Encapsulate	PID resistant and UV resistant Polymeric Film
Back Cover	Low Iron semi-Tempered Glass (2 mm thick)
Junction Box	30A Split Junction Box (3 nos. with individual Bypass Diode) - Weatherproof (IP68)
Bypass Diode	50 A, 45 V, 200 °C max. junction temperature
Cable	4 sq. mm, 300 mm length (Customised cable length available on request)
Connectors	MC4 compatible (MC4 original available on request)
Application Class Rating	Class A
Safety Class Rating	Class II
Mechanical Load Test	5400 Pa-Front; 2400 Pa-Back (as per IEC & UL)
Mounting Holes Pitch (Y)-mm	[A] 1400, [B] 1100, (Holes at 400 mm Y-pitch for tracker can be provided on customer request)
Mounting Holes Pitch (X)-mm	1095

MAXIMUM OPERATING CONDITIONS

Operating Temperature:	-40°C to +85°C
Maximum System Voltage:	1500V
Maximum Series Fuse Rating:	30 A

TEMPERATURE COEFFICIENTS

Current α (Isc) :	0.0265%/C
Voltage β (Voc) :	-0.2261%/C
Power γ (Pmax) :	-0.2909%/C

STACKING STANDARD

	19FT	2 0FT	40FT
No. of Modules per Container:	216	270	594
No. of Pallets per Container:	08	10	22
No. of Modules per Pallet/Weight:	27 Nos/940 Kg		
Pallet Dimensions in mm :	2320(L)*1000(W)*1275(H)		

Caution: Please read safety and installation instructions before using the product. *Warranty: Linear performance warranty for 30 years, with degradation up to 1% in 1st year and 0.4 %/year from year 2 to year 30. Please read Rayzon warranty documents thoroughly. Disclaimer: Specifications included in the datasheet are subject to change without prior notice owing to continuous innovation in the Product Development and R&D Activities. RAYZON SOLAR PVT. LTD. reserves the right to make any adjustment to the information described here. Dataset contained in this specification do not form a representative of a single module data. @T&C Apply.

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[Signature]

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Bhubaneswar-751024
www.rayzonsolar.com