7.1.6	Quality audits on environment and energy are regularly undertaken by the institution

Abstract

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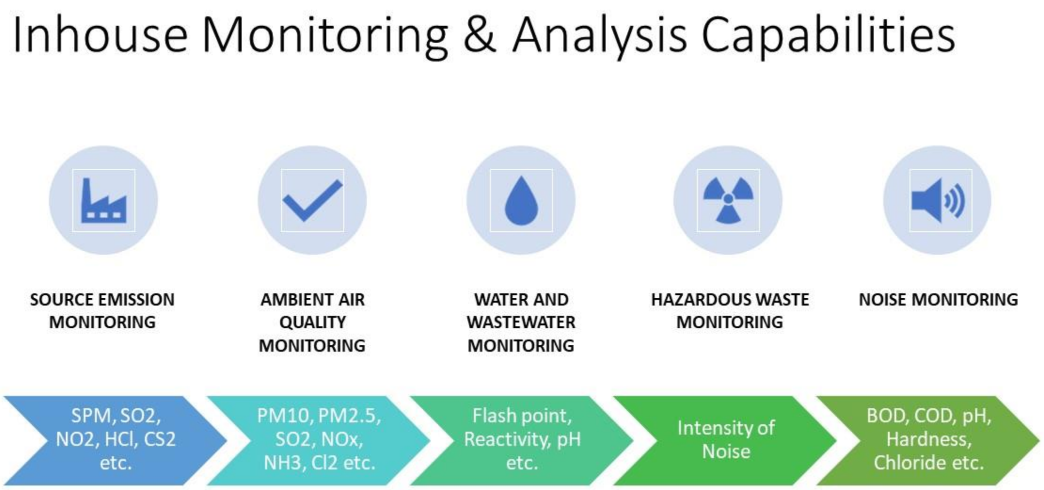
7.1.6.1	The institutional environment and energy initiatives are confirmed through the following

1 GREEN AUDIT/ ENVIRONMENT AUDIT



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1.1 ENVIRONMENT AND SUSTAINABILITY POLICY FOR GREEN CAMPUS

ATMIYA UNIVERSITY
(Established under the Gujarat Private University Act 11, 2018)
Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

Environment and Sustainability Policy for Green Campus

Preamble:

At Atmiya University, we are committed to creating an environmentally responsible and sustainable campus that reflects our dedication to ecological balance and compliance with environmental regulations. Guided by the **Gujarat Pollution Control Board (GPCB)** and **Central Pollution Control Board (CPCB)** rules, this policy aims to protect the environment, reduce pollution, and promote sustainable development in all aspects of university operations.

This commitment is further strengthened by the **Water (Prevention & Control) Act 1974**and the principles enshrined in the Indian Constitution, specifically:

- **Article 21,** which guarantees the right to life and dignity, including the right to live in a healthy and safe environment.
- **Article 51(A),** which places a fundamental duty on every citizen to protect and improve the natural environment.

By integrating these constitutional values and regulatory mandates into our governance, Atmiya University aims to foster a green campus, ensuring environmental sustainability and contributing to the well-being of present and future generations.

Scope:

The Environmental and Sustainability Policy of Atmiya University encompasses all campus operations, including academic, administrative, infrastructural, and extracurricular activities. The scope includes the following key areas:

- Sustainable campus infrastructure focusing on eco-friendly designs and green spaces.
- Conservation of energy resources through audits and renewable energy adoption.
- Judicious use and recycling of water, including rainwater-harvesting systems.
- Implementation of waste segregation, reduction, and scientific disposal practices.
- Regular environmental, green and energy audits to ensure compliance and sustainability.
- Pollution control measures to minimize air, water, noise, and soil contamination.
- Protection and restoration of biodiversity through native plantations and habitat conservation.
- Integration of environmental principles into academic curricula and research.
- Engagement of students, staff, and communities in sustainability initiatives.

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Objective

Atmiya University aims to create a clean, green, and sustainable campus by:

- Developing, monitoring, and evaluating policies that guide green campus initiatives.
- Minimizing the ecological footprint through sustainable practices and resource conservation.
- Educating students and staff on environmental issues and fostering a harmonious relationship with nature for a sustainable future.
- Promoting innovative environmental practices to enhance sustainability efforts.
- Cultivating an environmentally responsible culture across both curricular and extracurricular activities.
- Addressing local and regional environmental challenges with sustainable solutions.
- Ensuring efficient resource use and minimizing wasteful practices.
- Protecting biodiversity and reducing pollution to preserve the environment.

Environmental Goals and Targets

At Atmiya University, we are committed to achieving the following specific environmental goals to enhance sustainability:

- Reducing Energy Consumption: Implement energy-saving measures and promote the use of renewable energy sources to reduce overall energy usage.
- Minimizing Waste Generation: Adopt practices to reduce waste production and encourage reusability and recycling.
- Conserving Water: Implement water-saving techniques, rainwater harvesting, and wastewater recycling to ensure efficient water use.
- Waste Management: Ensure proper segregation, recycling, and environmentally safe disposal of waste, including e-waste and hazardous materials.
- Promoting Biodiversity: Enhance green spaces, protect natural habitats, and plant native species to support local biodiversity.

Key Focus Areas:

1. Clean Campus Initiatives:
   - Conduct regular cleaning drives, implement waste segregation, and launch beautification projects.
2. Green Energy:
   - Install renewable solar energy to reduce reliance on non-renewable energy.

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3. Landscaping and Biodiversity:
    - Develop green spaces, plant neem trees, and prioritize biodiversity conservation.
4. Energy Efficiency:
    - Install energy-efficient appliances, utilize natural lighting, and improve ventilation.
    - Establish **EV charging stations** for both 2-wheelers and 4-wheelers to promote sustainable transportation.
5. Water Conservation:
    - Implement rainwater-harvesting systems, use low-flow fixtures, and recycle RO wastewater.
    - Operate a **Sewage Treatment Plant (STP)** to treat wastewater on campus for plantation.
6. Air pollution Control
    - Implement alkaline wet scrubbers, fume hoods, and cupboards to effectively treat acidic and toxic fumes, neutralizing harmful emissions and ensuring a safer, cleaner environment for all.
7. Waste Management:
    - Segregate solid, liquid, e-waste, and bio-waste for recycling and composting.
    - Collaborate with local authorities and waste management companies for efficient waste disposal.
    - Develop **Parivartan- paper-recycling** units and composting initiatives for organic waste.
    - Use a **Wet Scrubber** for air pollution control and install an **Incinerator** for safe biomedical waste disposal.
8. Transportation and Mobility:
    - Encourage biking, carpooling, e-vehicles, and public transport.
    - Provide **EV vehicles &charging stations** for 2-wheelers and 4-wheelers to support electric vehicle use.
9. Green Building Standards:
    - Incorporate eco-friendly designs in all construction and renovation projects.
10. Curriculum Integration:
    - Integrate SDG awareness and environmental science into all academic disciplines.
    - Address SDGs 4, 6, 7, 11, 12, 14, 13, and 15 to ensure a holistic approach to sustainability.

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11. Community Engagement:
    - Conduct workshops, seminars, and outreach programs on environmental issues.
    - Adopt villages under the Unnat Bharat Abhiyan (UBA) for community development and environmental initiatives.
11. Paperless Administration and E-Governance:
    - Implement digital systems for administrative processes to reduce paper consumption.
    - Promote **e-governance** for efficient communication, document management, and decision-making.

Key Practices

1. Energy Efficiency:
    - Transition to energy-efficient devices and systems.
    - Promote behaviour changes to conserve energy.
    - Encourage the use of renewable energy solutions such as solar power and biogas.
2. Waste Management and Recycling:
    - Implement comprehensive waste management with dedicated recycling and composting units.
    - Initiatives like **Parivartan** (Paper Recycling Unit) and **Sarjan** (Agricultural Waste Recycling Unit)&**Niramay** (Advance Farming Techniques), **Satyakam** Gaushala create sustainable products.
    - Implement comprehensive e-waste segregation, recycling, and safe disposal practices to minimize environmental impact and promote responsible electronic waste handling.
3. Water Conservation:
    - Install rainwater-harvesting systems with over 17 lakh-litrecapacity.
    - Practice xeriscaping and responsible water usage to reduce dependency on municipal sources.
4. Air pollution Control - Treatment of Acidic and Toxic Fumes
    - Usages of alkaline wet scrubber and fume hoods & cupboards to treat acidic and toxic fumes, effectively neutralizing harmful emissions and ensuring a safer, cleaner environment for all.

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5. Biodiversity and Green Spaces:
   - Develop gardens, and tree plantations on & off campus, outdoor educational visits to promote biodiversity.
   - Integrate sustainable farming practices using Panchgavya and Jivamrut fertilizers.
6. Transportation and Mobility:
   - EV vehicles &charging stations for 2-wheelers and 4-wheelers to support electric vehicle use.
7. Education and Awareness:
   - Organize campaigns like "Use Solar-Save Nature", "Save Energy-Water", and tree plantation drives.
   - Incorporate sustainability topics into the curriculum to promote awareness and innovation.

Implementation and Monitoring

- Incentives and Recognition:
  - Reward individuals and groups actively participating in sustainability efforts.
- Budget and Funding:
  - Allocate resources for sustainability projects and seek grants for green initiatives from sponsoring bodies.
- Compliance and Legal Adherence:
  - Well establishedGPCB-recognized Environmental Audit and Monitoring Cellon campus to oversee compliance and improve sustainability practices.
- Periodic Review:
  - Continuously monitor the policy's impact and revise it based on feedback and emerging environmental challenges.

Conclusion

At Atmiya University, our commitment to environmental sustainability is integral to our mission of fostering holistic education and responsible citizenship.

By implementing a wide range of eco-friendly initiatives, from energy conservation and waste management to biodiversity conservation and paperless administration, we aim to create a campus that not only meets regulatory standards but also sets a benchmark for future generations.

Through strategic collaboration, innovative practices, and active community engagement, we are determined to contribute to a cleaner, greener, and more sustainable world.

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Our continuous efforts towards environmental stewardship align with the university's core values and our dedication to the United Nations Sustainable Development Goals (SDGs), ensuring a brighter and more sustainable future for all.

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1.2 WASTE MANAGEMENT AND DISPOSAL POLICY FOR GREEN CAMPUS

ATMIYA UNIVERSITY
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Waste Management and Disposal Policy

Atmiya University is committed to sustainable development and environmental stewardship. The **Waste Management and Disposal Policy** aligns with the principles of **Jeevan Vidya**, emphasizing harmony with nature, and promotes practices to minimize, manage, and responsibly dispose of waste. The policy integrates the **3Rs (Reduce, Reuse, Recycle)** with innovative waste management techniques to create a cleaner and healthier campus environment. This policy is aligned with UN-SDGs 6,11,12,13,14,15

Objectives

1. To minimize the generation of waste and promote resource conservation.
2. To ensure proper segregation, handling, and disposal of waste in compliance with environmental regulations.
3. To create awareness and encourage participation in sustainable waste management practices among stakeholders.
4. To foster research and innovation in waste management technologies.

Scope

This policy applies to all waste generated by the university, including solid, liquid, biomedical, and e-waste, across academic, administrative, and residential facilities.

Key Policy Provisions

1. Waste Collection and Segregation

- Provisions of Segregated Bins
- Waste is segregated at the source to facilitate recycling, composting, and proper disposal.
- Campus-wide awareness campaigns promote waste segregation practices.

2. Solid Waste Management

- **Organic Waste:**
  - Row Food waste and Flower Waste to produce nutrient-rich compost for natural farming.

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- **Paper Waste:**
  - Used paper is to be converted into multifunctional sheets, Filter Paper, File Folder, Envelops, Card Sheets etc.
- **Agricultural Waste:**
  - Creating sustainable products like Handy & table-top bouquets, photoframes, Garland, Pen-stand etc.
- **Plastic Waste:**
  - Converting plastic into useful items such as bags, packaging materials etc.

3. Liquid Waste Management

- **Effluent Treatment:**
  - Treatment of Laboratory and chemical wastewater.
- **Wastewater Recycling:**
  - Reuse of Treated wastewater for irrigation, landscaping, and cooling purposes.
- **Rainwater Harvesting:**
  - Creating necessary infrastructure for harvesting the rainwater.

4. Biomedical Waste Management

- Segregating into leak-proof, color-coded containers as per guidelines.
- Providing Regular training to ensure safe handling and disposal of biomedical waste, minimizing environmental impact and health risks.

5. E-Waste Management

- Repurposing Components from outdated equipment.
- Recycling and refurbishment programs for E-waste to extend the lifecycle of electronic devices, reducing landfill contributions.
- Disposing through authorised and registered recyclers
- Providing Students opportunities to gain hands-on experience in handling and managing e-waste through workshops and practical sessions.

6. Air-waste Management

- Planting trees and implementing systems for controlling pollution and removes harmful substances.
- Implementing systems for Capturing and removing hazardous fumes, vapours and particles from labs

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Implementation Strategies

1. **Awareness Campaigns**: Regular workshops and seminars to educate students, staff, and faculty on waste management best practices.
2. **Monitoring and Audits**: Routine waste audits to track waste generation, segregation, and disposal efficiency.
3. **Collaboration with Experts**: Partnerships with environmental agencies and NGOs to enhance waste management practices.
4. **Policy Compliance**: Adherence to local and national environmental regulations for waste disposal.

Outcomes and Benefits

- Creation of a cleaner, healthier, and more sustainable campus environment.
- Reduction in the ecological footprint of university operations.
- Financial savings through resource recovery and revenue from compost and recycled materials.
- Practical learning opportunities for students through active participation in waste management initiatives.

Review and Amendments

This policy will be reviewed annually by the **Environmental and Sustainability Committee** to incorporate advancements in waste management technologies and address evolving campus needs.

Conclusion

Atmiya University's Waste Management and Disposal Policy reflects its dedication to environmental responsibility and sustainable practices. By minimizing waste, maximizing resource recovery, and educating stakeholders, the university strives to lead by example, creating a culture of harmony with nature and responsible waste management.

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1.3 GREEN/ ENVIRONMENT AUDIT 2019-20

CLIENT: M/s. Atmiya University, Rajkot
Yogidham Gurukul, Kalawad Road, Rajkot – 360 005
(Audit Period: June 2019 to May 2020)

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1) Executive Summary

Atmiya University established on April 13, 2018, under the Gujarat Private University Act 11, 2018, ATMIYA University emphasizes to train young minds in consonance with the doctrines of higher education and human values. The aim of this University is to spread eternal happiness and to create a happy society in letter and spirit. The motto "सुहृदंसर्वभूतानम्" (Suhardam Sarva Bhootanam) is an expression of willingness to attain harmony with each creation of the Almighty!

This environmental audit report provides a comprehensive overview of Atmiya University, located in the vibrant city of Rajkot, Gujarat. Atmiya University, a prominent educational institution in the region, serves as a dynamic center for higher education, offering a diverse range of undergraduate, postgraduate, and doctoral programs. Established with a vision 'To nurture creative thinkers and leaders through transformative learning' and committed to create a transformative learning experience by imbibing domain specific knowledge & wisdom and to focus on research based teaching learning with Industry relevant application knowledge. The university plays a crucial role in shaping the region's educational landscape.

Situated in an urban setting, Atmiya University benefits from excellent connectivity and accessibility within the Rajkot area. The campus spans approximately 23.5 acre and features modern infrastructure that includes state-of-the-art classrooms, research labs, libraries, recreational facilities, and green spaces that enhance the learning environment.

The university accommodates a diverse and vibrant community from various parts of India and beyond. This thriving student body is supported by a faculty dedicated to promoting sustainable practices on campus, aligning with Atmiya University's mission to minimize its environmental impact.

A satellite image of the campus highlights its strategic layout and showcases the integration of natural and built environments, offering a visual perspective on the university's physical footprint within the urban landscape. This audit aims to evaluate Atmiya University's environmental practices and suggest actionable steps to enhance sustainability, further aligning with global standards in environmental responsibility and conservation.

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2) Acknowledgment

On behalf of the Environmental Audit & Consultancy Cell at **V.V.P. Engineering College, Rajkot**, we would like to express our sincere gratitude to the management of **Atmiya University, Rajkot** for entrusting us with the important task of conducting their Environmental Audit/Green Audit.

We deeply appreciate the cooperation extended by your team throughout the assessment process. This cooperation was instrumental in the successful completion of the audit.

We would also like to extend our special thanks to **Dr. Ashish Kothari. Deputy Registrar, Atmiya University** for their unwavering support. Their dedication proved to be invaluable in ensuring the project's completion. Finally, we thank all other staff members who actively participated in data collection and field measurements. Their contributions were essential to the smooth execution of the audit.

We are also thankful to:

SN	Name	Designation
1	Er. Ravi S. Tank	Chemical Engineer
2	Dr.Hemantkumar G. Sonkusare	Civil Engineer
3	Dr. Anilkumar S. Patel	Chemist

In closing, we would like to express our gratitude to **Dr.Santhanakrishnan Pillai, Vice Chancellor, Atmiya University** for extending the opportunity to evaluate their esteemed campus's environmental performance.

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3) Disclaimer

This Green Audit report has been prepared by the Environmental Audit Cellat **V.V.P. Engineering College, Rajkot for of Atmiya University, Rajkot**. It incorporates data submitted by University officials/representatives along with expert analysis by the EA&CC Audit team.

While all reasonable efforts have been made to ensure its accuracy, the report is based on information gathered in good faith. Conclusions are based on best estimates and do not constitute any express or implied warranty or undertaking. The EA&CC at Atmiya University, Rajkot assumes no responsibility for any direct or consequential loss arising from the use of the information, statements, or forecasts in this report.

The findings presented in this report are based entirely on data provided by Atmiya University and gathered by the audit team during their audit & monitoring visit. It assumes normal operating conditions within the institution throughout the audit period. The auditors are unable to comment on environmental audit parameters outside the scope of the on-site surveys. Consequently, the report's findings are strictly limited to the timeframe during which the audit team conducted its assessment.

The Environment Audit Cell at **V.V.P. Engineering College, Rajkot**, maintains strict confidentiality regarding all information pertaining to Atmiya University. No such information will be disclosed to any third party except public domain knowledge or when required by law or relevant accreditation bodies.

This certificate is valid solely for the current Environmental Audit/Green Audit report. It may be automatically revoked if any significant changes occur in the quantity or quality of waste generation at the aforementioned institute.

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4) Introduction

Since the 2019-20 academic year, the National Assessment and Accreditation Council (NAAC) requires all Higher Educational Institutions (HEIs) to submit an annual Environmental Audit/Green Audit report. This requirement falls under Criterion 7 of the NAAC accreditation process, which evaluates institutions for their environmental sustainability practices. NAAC, an autonomous body in India, assigns accreditation grades (A, B, or C) based on various criteria, including environmental stewardship.

Furthermore, conducting Environmental Audit/Green Audits aligns with the Corporate Social Responsibility (CSR) initiatives of HEIs. By implementing measures to reduce their carbon footprint, institutions contribute positively to mitigating global warming.

In response to the NAAC mandate, the University management opted for an external Environmental Audit/Green Audit conducted by a qualified professional auditor.

Environmental Audit/Green Audit entails a comprehensive environmental assessment, examining both on-campus and off-campus practices that directly or indirectly impact the environment. In essence, it is a systematic process of identifying, quantifying, recording, reporting, and analysing environmental aspects within the institute setting.

Environmental Audit/Green Audits originated as a tool to evaluate institutional activities that might pose risks to human health and the environment. It provides valuable insights for improvement, guiding institutions towards environmentally responsible practices and infrastructure.

The specific areas covered by this audit include Green Campus initiatives, Waste Management, Water Management, Air Pollution Control, Energy Management, and Carbon Footprint reduction strategies employed by the University.

The following sections delve deeper into the concept, structure, objectives, methodology, analytical tools, and overall goals of this Green Audit.

Educational institutions are increasingly prioritizing environmental concerns. As a result, innovative concepts are emerging to make campuses more sustainable and eco-friendly. Numerous institutions are adopting various approaches to address environmental challenges within their facilities, such as promoting

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energy conservation, waste recycling, water use reduction, and rainwater harvesting.

The activities of educational institutions can have both positive and negative environmental impacts. A Green Audit is a formal evaluation process that assesses the University's environmental footprint. It provides a comprehensive picture of the current environmental conditions on campus.

Green Audits are a valuable tool for University to identify areas of high energy, water, or resource consumption. This allows institutions to implement targeted changes and achieve cost savings. Additionally, Green Audits can analyse the nature and volume of waste generated, leading to improved recycling programs or waste minimization plans.

Green auditing and the implementation of mitigation measures offer a win-win scenario for institutions, students, and the environment. It can foster health and environmental awareness, promoting values and beliefs that benefit everyone. Green Audits also provide an opportunity for staff and students to gain a deeper understanding of the impact their institution has on the environment.

Furthermore, Green Audits can translate into financial savings by encouraging a reduction in resource usage. This process also empowers students and teachers to develop a sense of ownership for personal and social environmental responsibility.

The Green Audit process typically involves collecting primary data, conducting a site visit with University representatives, and reviewing relevant policies, activities, documents, and records.

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OBJECTIVE AND SCOPE

The broad aims/benefits of the Environmental Audit/Green Audit would be

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the University campus and its environment
- Enhancement of University profile
- Developing an environmental ethic and value systems in young people

Outcomes OF ENVIRONMENT AUDIT TO EDUCATIONAL INSTITUTIONS

There are many advantages of environment audit to an Educational Institute:

1. Protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Empower the organization to frame a better environmental performance.
4. Portrays good image of institution through its clean and green campus.

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5) **Environmental Policy**

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Environment and Sustainability Policy for Green Campus

Atmiya University recognizes the critical importance of environmental sustainability and its role in minimizing ecological footprints. Guided by its commitment to the principles of conservation and harmony with nature, the university adopts this Policy to integrate environmental awareness and sustainable practices into its daily academic and administrative operations, education, and community engagement. This policy reflects the university's dedication to fostering a sustainable future.

Objective

Atmiya University strives to establish a clean, green, and sustainable campus by:

- Developing, monitoring, and evaluating a policy to guide green campus initiatives.
- Reducing the ecological footprint through sustainable practices.
- Educating students and staff on environmental issues and on building harmony with nature & mother earth to create a healthier, sustainable future.
- Promoting innovative environmental practices to enhance sustainability performance.
- Strengthening an environmentally responsible culture across curricular and extracurricular activities.
- Addressing local and regional environmental challenges with sustainable solutions.
- Ensuring sustainable resource use and minimizing wasteful practices.
- Protecting biodiversity and reducing environmental pollution.

Environmental Goals and Targets

The university sets specific goals such as reducing energy consumption, minimizing waste generation, conserving water, managing/recycling/disposal of waste, and promoting biodiversity to enhance its sustainability initiatives.

Key Focus Areas

1. **Clean Campus Initiatives:** Regular cleaning drives, waste segregation, and beautification projects.

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2. **Green Energy**: Installing renewable energy sources to reduce dependency on non-renewable energy sources.
3. **Landscaping and Biodiversity**: Developing green spaces, planting neem trees, and conserving biodiversity.
4. **Energy Efficiency**: Installing energy-efficient appliances, natural lighting, and ventilation.
5. **Water Conservation**: Using rainwater harvesting systems, low-flow fixtures, and RO wastewater recycling.
6. **Waste Management**: Segregating solid, liquid, e-waste, and bio-waste for recycling and composting.
7. **Transportation and Mobility**: Promoting biking, carpooling, e-vehicles, and public transit.
8. **Green Building Standards:** Incorporating eco-friendly designs in construction and renovation projects.
9. **Curriculum Integration:** Courses on SDG awareness and environmental science across all disciplines.
10. **Community Engagement**: Conducting workshops, seminars, and outreach programs on environmental topics.

Key Practices

1. Energy Efficiency

- Transition to energy-efficient devices and systems.
- Encourage behaviour changes for energy conservation.
- Promote renewable energy solutions like solar and biogas.

2. Waste Management and Recycling

- Comprehensive waste management with dedicated recycling and composting units.
- Initiatives like **Parivartan (Paper Recycling Unit)** and **Sarjan (Agricultural Waste Recycling Unit)** to create sustainable products.

3. Water Conservation

- Installation of rainwater harvesting systems and reservoirs with a 17 lakh-litre capacity.
- Xeriscaping and responsible water usage to reduce dependency on municipal water.

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4. Biodiversity and Green Spaces

- Develop gardens, tree plantations, and outdoor educational spaces to promote biodiversity.
- Integrate sustainable farming practices using Panchgavya and Jivamrut fertilizers.

5. Transportation and Mobility

- Establish e-vehicle charging stations, bike racks, and pedestrian-friendly paths.

6. Education and Awareness

- Organize campaigns like **Use Solar-Save Nature**, **Save Energy-Water** and tree plantation drives.
- Include sustainability topics in the curriculum to foster awareness and innovation.

Implementation and Monitoring

- **Incentives and Recognition**: Reward active participants in sustainability efforts.
- **Budget and Funding**: Allocate resources for projects and seek grants for sustainability initiatives.
- **Compliance and Legal Adherence**: Ensure alignment with relevant environmental laws and regulations.
- **Periodic Review**: Monitor the policy's impact and revise based on feedback and emerging challenges.

Conclusion

Adopting this Policy highlights Atmiya University's unwavering commitment to environmental stewardship and sustainable development. By fostering a culture of awareness and proactive participation, the university aspires to create a greener and healthier campus, setting a benchmark for future generations. Together, we will build a resilient and sustainable future.

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6) General Information

a. Does any Green Audit conducted earlier? Yes

b. Total Area of the University = 84455 m^2

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

AY	Students			Teaching Staff			Non-Teaching Staff			Total		
	M	F	Trans	M	F	Trans	M	F	Trans	M	F	Trans
2019-2020	2477	1445	0	166	67	0	188	16	0	2831	1528	0

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

Month (AY- 2019-2020)	No. of Working Days
June	25
July	27
August	21
September	24
October	19
November	21
December	25
January	26
February	24
March	19
April	26
May	26
Total	**283**

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

Municipal dump yard	**No**
Garbage heap	**No**
Public convenience	**Yes**
Sewer line	**Yes**
Stagnant water	**No**
Industry	**No**
Bus / Railway station	**Yes**
Market / Shopping complex	**Yes**
Play Ground	**Yes**

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

Type of waste		**Response**	**Detail(s) of Waste Generated**	**Quantity of Waste Generated (kg)**
Solid	Biodegradable	Yes	Gardening, Cow dung	175
	Non-biodegradable	Yes	Sweeping waste,	10
	e-waste	Yes	Computer, Battery	00
Liquid		Yes	Kitchen Waste	35
Gas		No	--	--

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

- Composting: Gardening and cow dung waste used to make compost.
- Non-recyclable and non-biodegradable waste disposal is managed by the Rajkot Municipal Corporation.

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h. Do you use recycled paper in institute? Yes

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

Poster competition activities	**Yes**
Campaigns	**Yes**
Webinars and seminars	**Yes**

j. Is there a garden in your institute?

Garden	**Yes**	**Area = 6732.26m²**

k. Total number of Plants in Campus?

SN	Named Species	Numbers
1	Neem Tree	211
2	Lemon cypress	1
3	FicusMicrocapra	100
4	Hedge Plant	01
5	Tajplantshub dracaena	01
6	Crown of Throns	01
7	Spanish Moss (TilandsiaUsneoides)	10
8	Ruellia simplex	51
9	FagusSylvatica plant	01
10	Euphorbia Tithymaloides	11
11	Weeping Fig	685
12	LysilomaWatsonil	01
13	Royal Palm	38
14	Bamboo	230
15	Moringa	01
16	Acalyphawilkesiana	300
17	Dracaena Angustifolia	11
18	*Polysciasscutellaria*	04
19	Cordylinefruticosa	40
20	Dracaena Reflexa	500

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21	Garden Croton	01
22	polysciasguilfoylei	10
23	Oyster Plant (tradescantiazebrina)	300
24	Lonicerapileata	50
25	Saribusrotundifolius	10
26	Ixora	10
27	Hyophorbelagenicaulis	20
28	Purple heart	150
29	Yellow cosmos (sulphur cosmos)	100
30	Canna discolor	15
31	Durantaerecta	1100
32	Pritchardiapacifica	11
33	Capparissandwichiana	50
34	Nerium Oleander	10
35	Casuarinaequisetifolia	20
36	Caryotaurens	2
37	Areca palm	20
38	Ravenala	10
39	Iresineherbstii	300
40	Sago Plam	22
41	Sphgniticolatrilobata	1500
42	Thuja	24
43	Dracaena trifasciata	62
44	Ponytail Palm	2
45	Asparagus densiflorus	50
46	Alocasiazebrina	02
47	Bismarck palm	8
49	Lotus	100
50	Catharanthus	50
51	Padavati Jasmin	50
52	Caryotamitis	04

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53	Monoonlongifolium	3
54	Breyniadisticha	50
55	PlumeriaObtusa	10
56	Alovera	100
57	Century Plant	30
58	Sweet osmanthus	1
59	Crinum asiaticum	27
60	Diantherapectoralis	200
61	Hibiscus	10
62	Ficusaspera	5
63	Mulberry tree	10
64	Barbary fig	5
65	Dracaena angolensis	2
66	Terminaliachebula plant	2
67	Nettlespurges	2
68	Yellow elder	2
69	MadhucaLongifolia	2
70	Eucalyptus globulus.	1
71	Melicoccusbijugatus	1
72	Casuarinaequisetifolia	1
73	Indian jujube	5
74	Tulsi	50
75	Coconut palm tree	8
76	Calotropisgigantea	1
77	Persian Silk	5
78	Mango tree	1
79	Curry Tree	4
80	Punicagranatum	5
81	Pandanusveitchii	50
82	Streblusasper	5
	Total	**6859**

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l. List uses of water in your institute

Basic use of water in campus	KL/Day
Drinking	9K
Gardening	15K
Kitchen and Toilets	12K
Others	09 K
Hostel	18K
Total	**63 KL/Day**

m. Electricity Consumed

Month (Academic Year 2019-2020)	Electricity Consumed (kWh)
June	1,37,991
July	1,83,820
August	1,98,594
September	1,74,244
October	1,80,766
November	1,23,820
December	1,22,634
January	99,310
February	1,15,243
March	1,28,800
April	97,727
May	1,02,021
Total	**16,64,970**

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

Building	SN	Tank Description	Size (liter)	No. of Tank	Capacity (liter)
AU Building	1	Raw Water- A Wing	2500	4	10000
	2	Raw Water- B Wing	2500	4	10000
	3	Master RO - Raw Water	5000	3	15000
	4	RO Water Tank	2500	7	17500
	5	Pharmacy and Mechanical Lab	2000	1	2000
	6	Faculty Block (A& B Wing)	2500	2	5000
	7	Library Terrace	2000	1	2000
	8	Raw Water Near AU Building- Underground	275000	1	275000
MPAB	9	RO Water - at Terrace	2000	2	4000
	10	Raw Water- at Terrace	60000	1	60000
	11	Raw Water- at Terrace	40000	7	280000
	12	Near Building- Undrground	333746	2	667492
	13	Near Building- Undrground	336826	2	673652
	14	Below Temple- Underground	189924	1	189924
	15	Below Temple- Underground	43718	1	43718
	16	In Front of Store- Underground	123604	1	123604

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Workshop	17	RO Water- at Terrace	2000	1	2000
	18	Raw Water- at Terrace	2000	2	4000
	19	Raw Warer- at Terrace	5000	1	5000
	20	Behind Workshop- Round Tank- Underground	45650	1	45650
Science Building	21	RO Water- at Terrace	2500	1	2500
	22	Raw Water Tank- at Terrace	23300	2	46600
	23	Raw Water Tank- Ladies Toilet	30000	3	90000
	24	CIF Lab	1500	1	1500
	25	Raw Water- OTIS- Underground	32620	1	32620
	26	Wastewater- Outside the Building	2000	1	2000
Yogidham Gate	27	Raw Water Tank- Underground	48750	4	195000
Niramay	28	RO Water Tanki at Terrace	2500	1	2500
	29	Raw Water Tank- at Terrace	11650	1	11650
	30	Raw Water Tank- Near Office	5000	2	10000
Sarva naman	31	Raw Water Tank- at Terrace	2000	1	2000
	32	Raw Water Tank- at Terrace	8550	1	8550
	33	Raw Water- inside building	600	1	600
Total Water Storage Capacity					**28,41,060**

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7) **Green Initiatives By the Institute**

Green Architecture

The incorporation of green architecture principles in academic institutions not only reduces environmental impact but also fosters a healthier and more inspiring learning environment for students and faculty alike. By integrating features such as passive solar design, natural ventilation, and green roofs, these institutions showcase a commitment to sustainability while promoting innovation and awareness of eco-friendly design practices within the academic community.

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Natural Light and Ventilation in Academic Building

Impact:

- Low artificial lighting requirements
- Energy consumption optimization
- Low green house gas emission
- Low level of strain to Eyes

Campus Biodiversity

A thriving campus biodiversity in academic institutions is not merely a reflection of ecological health but also serves as a testament to the institution's commitment to sustainability and environmental stewardship. It provides a living laboratory for students to engage with nature firsthand, fostering a deeper understanding of ecological systems and instilling a sense of responsibility towards conservation. Beyond its educational value, a biodiverse campus offers numerous benefits such as improved air and water quality, enhanced aesthetics, and increased resilience to environmental stressors. It becomes a sanctuary for wildlife, contributing to the preservation of local ecosystems and biodiversity at large. Atmiya University campus is a rich in the biodiversity with the full of greenery and in house terrace garden.

Glimpse of Flora at University Campus

Gaushala at Campus

- 8 Indian Breed Cow
- 01 Bull
- State of the art facilities
- Value addition cow urine for herbal and fertilizer utilization
- Decorative products are being made from the cow dung.
- Jivamrut fertilizer being used in the campus is a product of gaushala.
- It contibutes to maintain the organic carbon content in the campus soil as it provides the raw material for the compost.

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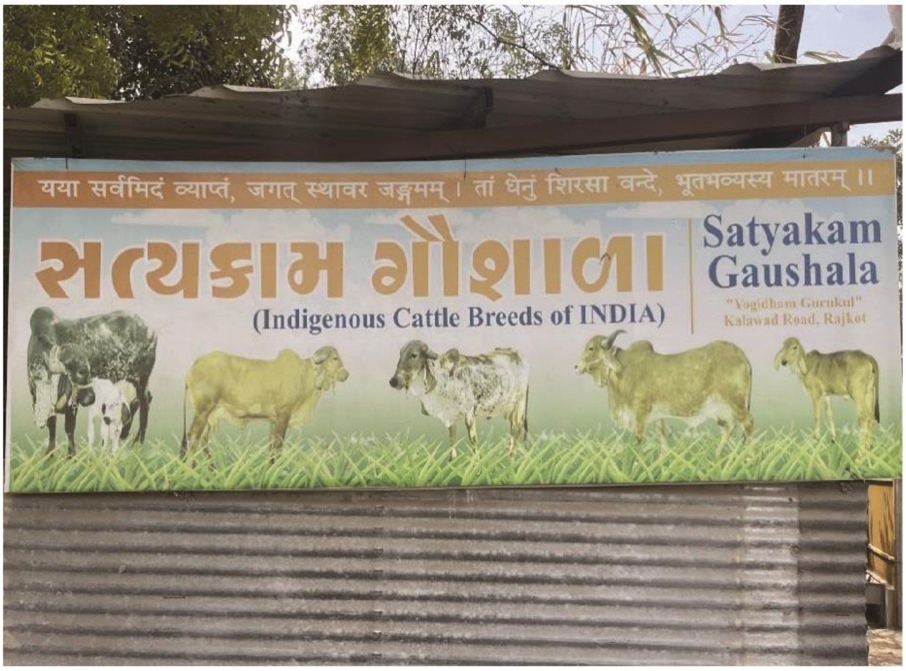

Satyakam Gaushala

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It provides students with firsthand experience in animal care, veterinary science, and sustainable agriculture. They can learn about the importance of cows in Indian culture, their significance in agriculture, and sustainable farming practices.

Gaushalas contributes to the eco-friendly practices like composting cow dung for fertilizer, using biogas for cooking which can serve as models for sustainable living and agriculture.

In Indian cultures, cows are revered as sacred animals. Having a gaushala on campus can help preserve and promote this cultural heritage among students and the community.

Universities can conduct research on various aspects of cow rearing, including breeding, nutrition, and healthcare. This research can contribute to advancements in animal science and agriculture.

Cows play a crucial role in maintaining soil fertility through their dung, which is rich in nutrients. By managing cow waste effectively, gaushalas can contribute to soil health and environmental conservation.

Solid Waste Management

Natural Fertilizer from Organic Waste

Jivamrut (Natural Fertilizer)

Installation Detail:

- Year: 2008
- Place: at boys parking
- Process: Collect neem leaves form campus and added with cow dung, cow urine and Earthworms

Amrut Soil

- Ingredients for AmrutMitti range from cow dung, cow urine, biomass like dry and decayed leaves, household kitchen waste like vegetable peels.
- AmrutSoil is full of all nutrients needed by plants, is very rich in variety of microbes, has the right pH, has high carbon content, has excellent water holding capacity.
- Mixing Cow dung, cow urine and jaggery
- Immersing dry biomass in AmrutJal kept in drums
- Process take at least 1 month
- Use as garden fertilizer.

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Impact:

- Applied in garden as fertilizer
- Improve soil micro-biota of campus soil
- Less usages of chemical fertilizer

Amrut Soil and Jivamrut Plant

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Municipal Solid Waste Segregation Bin

Separate Dustbin for Recyclable and Non-Recyclable Waste

University campus having more the 100 solid waste collection dustbin design for the proper waste segregation. Waste paper is recycled at the in-house paper recycling facility and converted into the filter paper, envelope and other artistic and decorative products.

Having separate bins encourages people to sort their waste, making it easier to recycle materials such as paper, plastic, glass, and metal. This promotes a culture of recycling and reduces the amount of waste sent to landfills or incinerators.

Recycling materials reduces the need for raw materials, energy, and water required to manufacture new products. This conserves natural resources and reduces the environmental impact associated with extraction, processing, and transportation.

Implementing separate bins provides an opportunity for educational initiatives on waste management, recycling, and environmental stewardship. Students, faculty, and staff can learn about the importance of recycling and how their actions contribute to sustainability.

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Paper Recycling Unit

In embracing the principles of the circular economy, Atmiya university is pioneer in sustainable practices such as paper recycling, ensuring that resources are reused and regenerated rather than disposed of after single use. By implementing robust paper recycling programs, these institutes not only reduce waste and environmental impact but also cultivate a culture of resource efficiency and responsible consumption among students, faculty, and staff.

Recycling paper can lead to cost savings for the university by reducing waste disposal fees and the need to purchase new paper products. This can free up financial resources that can be allocated to other campus initiatives or projects.

arivartan- Paper Recycling Plant

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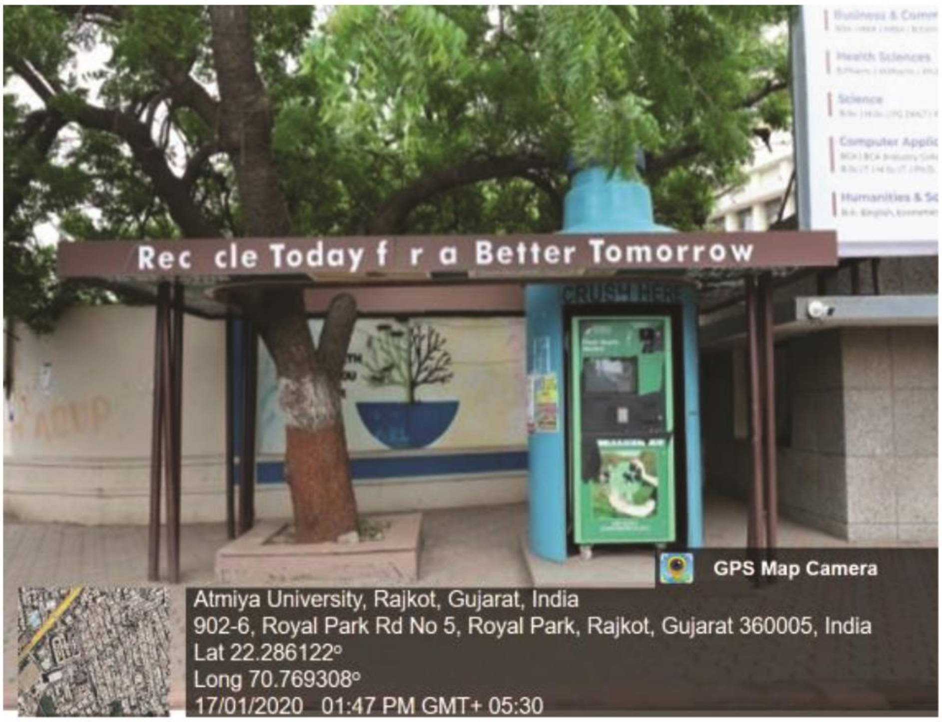
Plastic Water Bottle Recycling Plant

University have installed water bottle recycling plant at entrance for all stakeholders having capacity of 20 kg/day

A bottle crusher helps reduce the volume of plastic bottles, thereby decreasing the amount of plastic waste generated on campus. This contributes to waste reduction efforts and helps minimize the environmental impact of plastic pollution.

By providing a convenient way to crush plastic bottles, the crusher encourages recycling behavior among students, faculty, and staff. It reinforces the importance of recycling and helps divert plastic waste from landfills or incinerators.

Plastic pollution poses significant threats to ecosystems, wildlife, and human health. By reducing plastic waste through recycling, a bottle crusher helps protect the environment and minimize the adverse effects of plastic pollution on marine life, terrestrial habitats, and waterways.



Plastic Bottle Crusher Machine

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Energy Conservation Measures

Renewable Power Generation

The adoption of solar rooftop systems in Atmiya University significantly reduces carbon emissions, contributing to a cleaner and more sustainable environment while serving as a tangible demonstration of the institute's commitment to renewable energy and climate action. Additionally, the integration of solar rooftops enhances the educational experience by providing real-world examples of sustainable technology, inspiring students to explore and innovate in the field of renewable energy. Atmiya University having fully operational solar rooftop electricity generation capacity as per the vision of the government.

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Rooftop Solar Plant

Renewable Power Generation per Month

Month & Year	RE Cultivation in KWh
June-2019	23,711
July-2019	21,180
August-2019	15,144
September-2019	16,634
October-2019	17,936
November-2019	24,740
December-2019	22,309
January-2020	23,540
February-2020	26,538
March-2020	18,630
April-2020	38,737
May-2020	29,866
Total	**2,78,965**

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Energy Efficient Electrical Appliances

Energy-efficient infrastructure in institutions not only lowers operational costs but also serves as a beacon of sustainable practices, showcasing the institution's dedication to environmental stewardship and responsible resource management. By implementing measures such as LED lighting, efficient HVAC systems, and smart building technologies, these institutions demonstrate leadership in sustainability while providing a conducive learning environment for students and faculty.

LED Lighting and 5 Star Rated Appliances

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Water Management

Water conservation is a key activity as water availability affects on the development of the campus as well as on all area of development such as farming, industries, etc. Keeping this view water conservation activity is carried out.

Sources of Water

- Rainwater Harvesting
- Bore water
- A Main source of water is RMC connection and Ground water is extracted to fulfill the requirement. The University stores the water in overhead tank.

Sewage Disposal Facility

Atmiya University is situated in the municipal area of Rajkot. RMC (Rajkot Municipal Corporation) provides municipal facilities to the university. Sewage is being disposed in the sewerage network of Rajkot city.

RO Plant

RO plants provide clean and safe drinking water by removing contaminants, such as bacteria, viruses, and dissolved solids, from the water. This ensures that students, faculty, and staff have access to safe drinking water, promoting better health and well-being. With access to clean drinking water on campus, there is less reliance on bottled water. This can lead to a significant reduction in plastic waste generated by the university, contributing to environmental sustainability efforts.

Reverse Osmosis Plant for Drinking Water

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Rainwater Harvesting

Capacity : 12 Lac Liters

Environmental Benefits: By reducing the demand for potable water and minimizing storm water runoff, rainwater harvesting contributes to environmental conservation efforts. It helps preserve freshwater resources, protects aquatic ecosystems, and mitigates the impacts of urbanization on natural hydrological cycles.

Water Conservation: Rainwater harvesting reduces reliance on traditional water sources by collecting and storing rainwater for various uses, such as irrigation, flushing toilets, and landscape maintenance. This helps conserve freshwater resources and reduces the strain on municipal water supplies, especially during periods of drought or water scarcity.

Rainwater Harvesting Tank

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Air Pollution Control Measures

Acidic Fume Suction Panel

Laboratory of chemistry department is equipped with the vapour suction panel mounted on the platform. It collects the hazardous gas and channelizes it to the wet scrubber for the neutralizing before discharge into the atmosphere.

Acidic Fume Suction Panel

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Fume Hood at Chemistry laboratory

Fume hoods are designed to contain and exhaust potentially hazardous fumes, vapors, and gases generated during chemical experiments. They create a barrier between the experiment and the laboratory environment, preventing exposure to toxic or harmful substances. Fume hoods protect laboratory personnel from inhaling harmful chemicals or being exposed to hazardous substances.

Fumehood at Chemistry Laboratory

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Wet Scrubber

1. **Reduction of Air Pollution:** Scrubbers help remove harmful gases, such as hydrogen chloride (HCl) and hydrogen fluoride (HF), from the laboratory air. By capturing these pollutants before they are released into the atmosphere, scrubbers contribute to reducing air pollution and improving indoor and outdoor air quality.

2. **Prevention of Acid Rain Formation:** Hydrogen chloride and hydrogen fluoride emissions can contribute to the formation of acid rain when released into the atmosphere. Alkali gas scrubbers mitigate this environmental impact by removing these acidic gases from laboratory emissions before they can react with moisture in the air and contribute to acid rain formation.

3. **Protection of Ecosystems:** Acid rain resulting from air pollution can have detrimental effects on ecosystems, including damage to vegetation, soil, aquatic habitats, and wildlife. By reducing the emission of acidic gases, alkali gas scrubbers help protect sensitive ecosystems and promote biodiversity conservation.

4. **Minimization of Health Risks:**Hydrogen chloride and hydrogen fluoride are corrosive and toxic gases that can pose health risks to laboratory personnel and surrounding communities if released into the environment. Alkali gas scrubbers help minimize these risks by capturing and neutralizing these hazardous pollutants before they can be emitted.

5. **Reduction of Odors:** In addition to removing acidic gases, alkali gas scrubbers can also help eliminate unpleasant odors associated with certain chemical processes in the laboratory. This improvement in air quality enhances the comfort and well-being of laboratory personnel and visitors.

6. **Conservation of Resources:** Alkali gas scrubbers typically utilize alkaline solutions, such as sodium hydroxide (NaOH), to neutralize acidic gases. While the operation of scrubbers requires resources such as water and chemicals, their use

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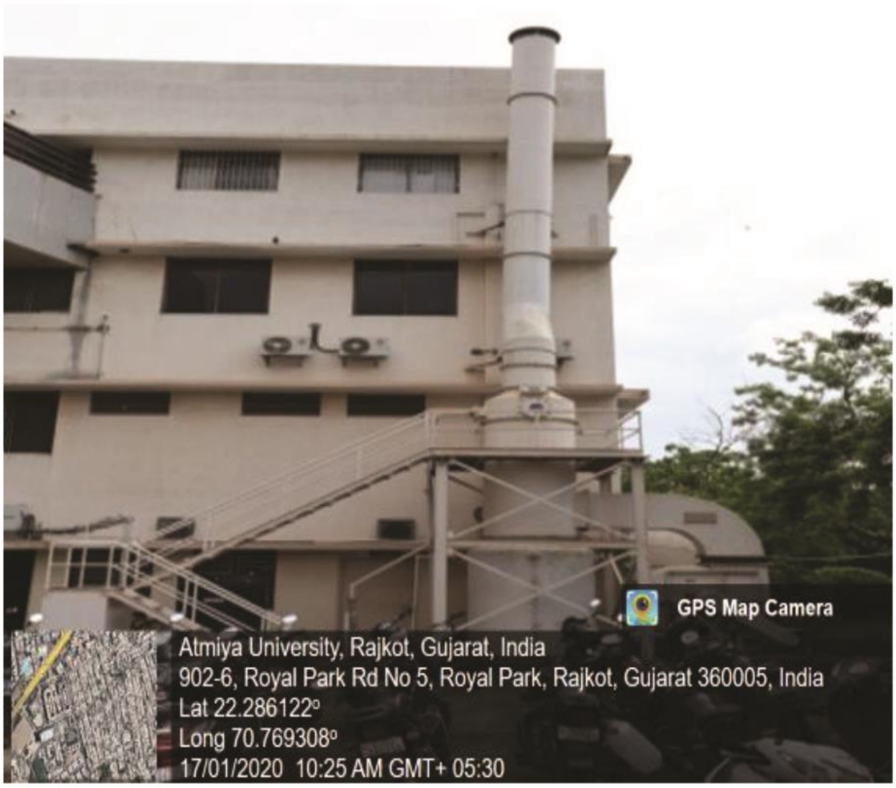
contributes to the conservation of environmental resources by preventing the release of pollutants into the air and minimizing the need for remediation measures.



Wet Gas Scrubber

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Tree Plantation

University campus is full of indigenous tree and medicinal plants produce positive impact on environment.

- Air Quality Improvement: Trees and plants act as natural air filters, absorbing carbon dioxide (CO2) and other pollutants from the air while releasing oxygen through the process of photosynthesis. This helps improve air quality on campus, reducing the concentration of harmful gases and particulate matter and promoting a healthier environment for students, faculty, and staff.

- Carbon Sequestration: Trees play a crucial role in mitigating climate change by sequestering carbon from the atmosphere and storing it in their biomass. By planting trees on campus, universities can contribute to carbon sequestration efforts and help offset their carbon footprint, supporting broader sustainability goals and initiatives.

- Temperature Regulation: Trees provide natural shade and evapotranspiration, helping to cool the surrounding environment and reduce the urban heat island effect. By creating shaded areas and lowering ambient temperatures, trees contribute to energy conservation efforts by reducing the need for air conditioning and mitigating heat-related stress during hot weather.

- Storm water Management: The roots of trees and plants help absorb rainwater and reduce runoff, preventing soil erosion and minimizing the risk of flooding and water pollution. By incorporating green infrastructure such as rain gardens and bio swales, university campuses can effectively manage storm water runoff, improve water quality, and enhance overall watershed health.

- Biodiversity Conservation: Trees and plants provide habitat and food sources for various species of birds, insects, and other wildlife, contributing to biodiversity conservation on campus. By creating green corridors and natural habitats, universities support local ecosystems and promote ecological resilience in urban environments.

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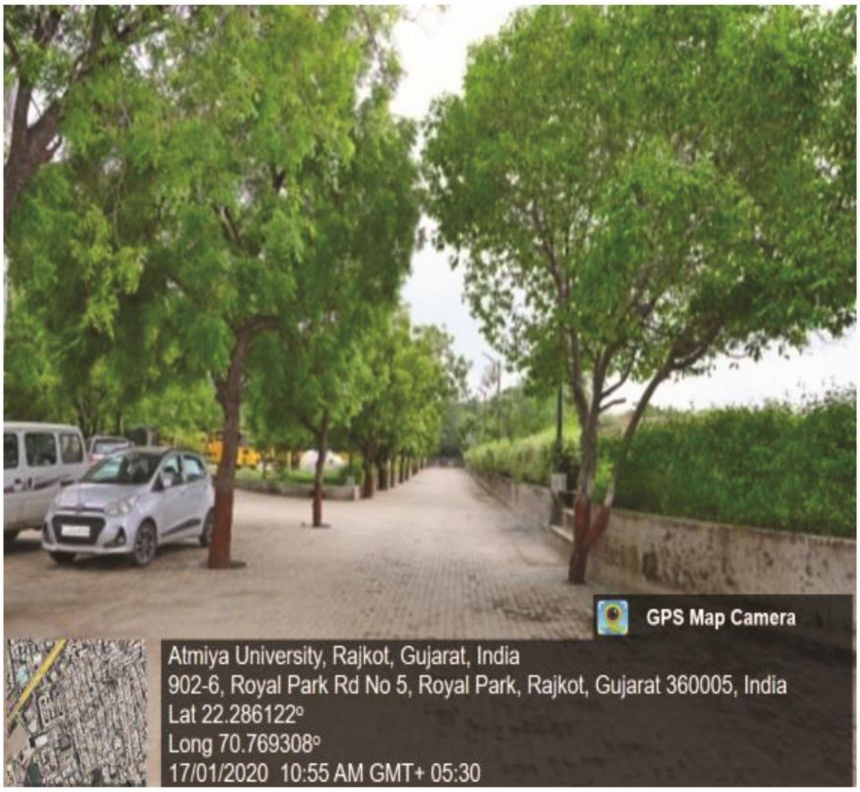
- Noise Reduction: Trees and vegetation help absorb and deflect sound waves, acting as natural buffers against noise pollution from nearby roads, buildings, and other sources. By planting trees strategically around campus buildings and outdoor spaces, universities can create quieter and more tranquil environments conducive to learning, research, and relaxation.



Greenery at Atmiya University Campus

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8) Audit Methodology

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the document, interviewing responsible persons and data analysis, measurements and recommendations. The methodology adopted for this audit was a three-step process comprising of:

1. Data Collection – In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements.

Following steps were taken for data collection:

- Site Visit
- Data about the general information was collected by observation and interview.
- The power consumption of appliances was recorded by taking an average value in some cases.

2. Data Analysis - Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus, Water consumption, Waste Generation and Greenery Management.

3. Recommendation – On the basis of results of data analysis and observations, some steps for reducing power and water consumption were recommended. Proper treatments for waste were also suggested. Use of fossil fuels has to be reduced for the sake of community health.

The above target areas particular to the University was evaluated through questionnaire circulated among the students for data collection.

The following data collected for the following areas during the assessment.

1. Environment & Waste Management
2. Energy Management
3. Water Management

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9) Monitoring, Observations& Recommendations

Ambient Air Quality Monitoring

Date:17/01/2020

Location	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)
AU Building Main Entrance	43.4	23.4	10.6	18.9
B/H Ashwad canteen	41.2	21.2	8.9	14.7
Nr. Bus parking	63.4	46.2	14.7	21.6
Nr. Haridarshanam Temple	67.8	49.4	16.8	22.5

Noise Monitoring

Date: 17/01/2020

Location	Observed Value (db (A))	Permissible Day Time Limit (db (A))
AU Building Main Entrance	48	50
B/H Ashwad canteen	45	
Nr. Bus parking	49	
Nr. Haridarshanam Temple	47	

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water from VIP Parking Area
Sample collection Date	17/01/2020
Sample analysis date	17/01/2020
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.9	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	539.25	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	135.42	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	69.3	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 7 colonies)
MacConkey Plates	TLTC (< 3 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell water from Yogidham Gate 3
Sample collection Date	17/01/2020
Sample analysis date	17/01/2020
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.8	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	342.9	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	11.92	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	58	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell water near boy's Hostel
Sample collection Date	17/01/2020
Sample analysis date	17/01/2020
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.84	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	323.9	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	23.5	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**BOD**	5.67	mg/l	200 ± 37 mg/l	IS 3025 (part 44)
8	**Total Hardness (as $CaCO_3$)**	70	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TMTC (> 100 colonies)
MacConkey Plates	TMTC (> 100 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water near Temple
Sample collection Date	17/01/2020
Sample analysis date	17/01/2020
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.92	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	332.5	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	8.23	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**BOD**	5.27	mg/l	200 ± 37 mg/l	IS 3025 (part 44)
8	**Total Hardness (as $CaCO_3$)**	88	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	TLTC (< 4 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- AU Main Building
Sample collection Date	17/01/2020
Sample analysis date	17/01/2020
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.70	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	128.6	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	9.87	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**BOD**	4.83	mg/l	200 ± 37 mg/l	IS 3025 (part 44)
8	**Total Hardness (as $CaCO_3$)**	16	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- Science Building
Sample collection Date	17/01/2020
Sample analysis date	17/01/2020
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.80	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	144.5	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	7.63	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**BOD**	3.20	mg/l	200 ± 37 mg/l	IS 3025 (part 44)
8	**Total Hardness (as $CaCO_3$)**	25	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

*TLTC-Too Less To Count

* TMTC-Too Much To Count

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Observations & Suggestions:

1. University have installed the energy efficient LED lighting however it is recommended that university should install sensor based LED lights at critical movement areas.
2. RO reject water is being utilized into the garden for the irrigation purpose. It is a very good initiative. To upgrade the water conservation one step ahead. It is recommended that university should go for the installation of sewage treatment plant.
3. University is using the rainwater by storing it into the underground tank. It is recommended that create awareness in surrounding area about this good initiative
4. Currently biodegradable waste is being disposed by the composting. It can be upgraded to the biogas plant. This will improve resource utilization factor of waste.
5. University is situated in the heart of Rajkot city. Majority student commute by the personal vehicle. It is suggested that university should start bus service.
6. University have the state of the art laboratory facility for the environmental monitoring.
7. The botanical garden is located within the campus to preserve local plat species.
8. University has provided separate dustbin for the recyclable and non-recyclable waste is a positive step towards the sustainability.

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10) Certificate

V.V.P. ENGINEERING COLLEGE

ENVIRONMENTAL AUDIT CELL, Vajdi - Virda, Kalawad Road, Rajkot

Environmental Audit Certificate

Atmiya University, Rajkot-360005-Gujarat-India

For the AY (2019-20)

Environmental Audit for the period **June 2019 to May 2020** has been conducted for the **Atmiya University, Rajkot** to assess the green initiatives planning and efforts implemented in the college campus like Green Campus Management. This Environmental Audit is also aimed to assess eco-friendly initiatives of the Institute towards sustainability.

It is believed that the institution has presented authentic data on various aspects of working of the institute before the audit team. The recommendations are based on the data presented before the team as they existed at the audit time. This certificate is valid for the audit period only. However, it is subject to automatic cancellation in case of any change in prevailing green practice or misleading data. The findings reported in this audit report are entirely based on data furnished by the institute and data collected by the audit team during the audit. Thus, the findings reported in this audit report are strictly limited to the period when the audit was conducted.

The Environmental Quality in the campus is found **adequate and efficacious**.

Dr. Sushil Korgaokar *(Recognised Schedule-I Environmental Auditor, Gujarat Pollution Control Board-GPCB – Gandhinagar, Gujarat)* Environmental Audit Laboratory, V.V.P. Engineering College, Virda – Vajdi, Kalawad Road, Opp. Motel the Village, Rajkot-360005-Gujarat-India	V.V.P. Engineering College Environment Cell Rajkot : 360 005

I assure that the data presented is authentic to the best of my knowledge & I agree to comply with the recommendations received this report within a year at maximum after the internal review.

Dr. Ashish M. Kothari, Dy. Registrar, Atmiya University, Rajkot-360005-Gujarat-India	Deputy Registrar Atmiya University Rajkot Atmiya University Rajkot

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1.4 GREEN/ ENVIRONMENT AUDIT 2020-21

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CONTENT

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1) Executive Summary

Atmiya University established on April 13, 2018, under the Gujarat Private University Act 11, 2018, ATMIYA University emphasizes to train young minds in consonance with the doctrines of higher education and human values. The aim of this University is to spread eternal happiness and to create a happy society in letter and spirit. The motto "सुहृदंसर्वभूतानम्" (Suhardam Sarva Bhootanam) is an expression of willingness to attain harmony with each creation of the Almighty!

This environmental audit report provides a comprehensive overview of Atmiya University, located in the vibrant city of Rajkot, Gujarat. Atmiya University, a prominent educational institution in the region, serves as a dynamic center for higher education, offering a diverse range of undergraduate, postgraduate, and doctoral programs. Established with a vision 'To nurture creative thinkers and leaders through transformative learning' and committed to create a transformative learning experience by imbibing domain specific knowledge & wisdom and to focus on research based teaching learning with Industry relevant application knowledge. The university plays a crucial role in shaping the region's educational landscape.

Situated in an urban setting, Atmiya University benefits from excellent connectivity and accessibility within the Rajkot area. The campus spans approximately 23.5 acre and features modern infrastructure that includes state-of-the-art classrooms, research labs, libraries, recreational facilities, and green spaces that enhance the learning environment.

The university accommodates a diverse and vibrant community from various parts of India and beyond. This thriving student body is supported by a faculty dedicated to promoting sustainable practices on campus, aligning with Atmiya University's mission to minimize its environmental impact.

A satellite image of the campus highlights its strategic layout and showcases the integration of natural and built environments, offering a visual perspective on the university's physical footprint within the urban landscape. This audit aims to evaluate Atmiya University's environmental practices and suggest actionable steps to enhance sustainability, further aligning with global standards in environmental responsibility and conservation.

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2) Acknowledgment

On behalf of the Environmental Audit & Consultancy Cell at **V.V.P. Engineering College, Rajkot**, we would like to express our sincere gratitude to the management of **Atmiya University, Rajkot** for entrusting us with the important task of conducting their Environmental Audit/Green Audit.

We deeply appreciate the cooperation extended by your team throughout the assessment process. This cooperation was instrumental in the successful completion of the audit.

We would also like to extend our special thanks to **Dr. Ashish Kothari. Deputy Registrar,** for their unwavering support. Their dedication proved to be invaluable in ensuring the project's completion. Finally, we thank all other staff members who actively participated in data collection and field measurements. Their contributions were essential to the smooth execution of the audit.

We are also thankful to:

SN	Name	Designation
1	Er. Ravi S. Tank	Chemical Engineer
2	Dr. Hemantkumar G. Sonkusare	Civil Engineer
3	Dr. Anilkumar S. Patel	Chemist

In closing, we would like to express our gratitude to **Dr. Santhanakrishnan Pillai, Vice Chancellor, Atmiya University** for extending the opportunity to evaluate their esteemed campus's environmental performance.

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3) Disclaimer

This Green Audit report has been prepared by the Environmental Audit **Cell at V.V.P. Engineering College, Rajkot for of Atmiya University, Rajkot**. It incorporates data submitted by University officials/representatives along with expert analysis by the EA&CC Audit team.

While all reasonable efforts have been made to ensure its accuracy, the report is based on information gathered in good faith. Conclusions are based on best estimates and do not constitute any express or implied warranty or undertaking. The EA&CC at Atmiya University, Rajkot assumes no responsibility for any direct or consequential loss arising from the use of the information, statements, or forecasts in this report.

The findings presented in this report are based entirely on data provided by Atmiya University and gathered by the audit team during their audit & monitoring visit. It assumes normal operating conditions within the institution throughout the audit period. The auditors are unable to comment on environmental audit parameters outside the scope of the on-site surveys. Consequently, the report's findings are strictly limited to the timeframe during which the audit team conducted its assessment.

The Environment Audit **Cell at V.V.P. Engineering College, Rajkot**, maintains strict confidentiality regarding all information pertaining to Atmiya University. No such information will be disclosed to any third party except public domain knowledge or when required by law or relevant accreditation bodies.

This certificate is valid solely for the current Environmental Audit/Green Audit report. It may be automatically revoked if any significant changes occur in the quantity or quality of waste generation at the aforementioned institute.

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4) Introduction

Since the 2019-20 academic year, the National Assessment and Accreditation Council (NAAC) requires all Higher Educational Institutions (HEIs) to submit an annual Environmental Audit/Green Audit report. This requirement falls under Criterion 7 of the NAAC accreditation process, which evaluates institutions for their environmental sustainability practices. NAAC, an autonomous body in India, assigns accreditation grades (A, B, or C) based on various criteria, including environmental stewardship.

Furthermore, conducting Environmental Audit/Green Audits aligns with the Corporate Social Responsibility (CSR) initiatives of HEIs. By implementing measures to reduce their carbon footprint, institutions contribute positively to mitigating global warming.

In response to the NAAC mandate, the University management opted for an external Environmental Audit/Green Audit conducted by a qualified professional auditor.

Environmental Audit/Green Audit entails a comprehensive environmental assessment, examining both on-campus and off-campus practices that directly or indirectly impact the environment. In essence, it is a systematic process of identifying, quantifying, recording, reporting, and analysing environmental aspects within the institute setting.

Environmental Audit/Green Audits originated as a tool to evaluate institutional activities that might pose risks to human health and the environment. It provides valuable insights for improvement, guiding institutions towards environmentally responsible practices and infrastructure.

The specific areas covered by this audit include Green Campus initiatives, Waste Management, Water Management, Air Pollution Control, Energy Management, and Carbon Footprint reduction strategies employed by the University.

The following sections delve deeper into the concept, structure, objectives, methodology, analytical tools, and overall goals of this Green Audit.

Educational institutions are increasingly prioritizing environmental concerns. As a result, innovative concepts are emerging to make campuses more sustainable and eco-friendly. Numerous institutions are adopting various approaches to address environmental challenges within their facilities, such as promoting

energy conservation, waste recycling, water use reduction, and rainwater harvesting.

The activities of educational institutions can have both positive and negative environmental impacts. A Green Audit is a formal evaluation process that assesses the University's environmental footprint. It provides a comprehensive picture of the current environmental conditions on campus.

Green Audits are a valuable tool for universities to identify areas of high energy, water, or resource consumption. This allows institutions to implement targeted changes and achieve cost savings. Additionally, Green Audits can analyse the nature and volume of waste generated, leading to improved recycling programs or waste minimization plans.

Green auditing and the implementation of mitigation measures offer a win-win scenario for institutions, students, and the environment. It can foster health and environmental awareness, promoting values and beliefs that benefit everyone. Green Audits also provide an opportunity for staff and students to gain a deeper understanding of the impact their institution has on the environment.

Furthermore, Green Audits can translate into financial savings by encouraging a reduction in resource usage. This process also empowers students and teachers to develop a sense of ownership for personal and social environmental responsibility.

The Green Audit process typically involves collecting primary data, conducting a site visit with University representatives, and reviewing relevant policies, activities, documents, and records.

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OBJECTIVE AND SCOPE

The broad aims/benefits of the Environmental Audit/Green Audit would be

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the University campus and its environment
- Enhancement of University profile
- Developing an environmental ethic and value systems in young people

Outcomes OF ENVIRONMENT AUDIT TO EDUCATIONAL INSTITUTIONS

There are many advantages of environment audit to an Educational Institute:

1. Protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Empower the organization to frame a better environmental performance.
4. Portrays good image of institution through its clean and green campus.

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5) **Environmental Policy**

ATMIYA UNIVERSITY

(Established under the Gujarat Private University Act 11, 2018)
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Environment and Sustainability Policy for Green Campus

Atmiya University recognizes the critical importance of environmental sustainability and its role in minimizing ecological footprints. Guided by its commitment to the principles of conservation and harmony with nature, the university adopts this Policy to integrate environmental awareness and sustainable practices into its daily academic and administrative operations, education, and community engagement. This policy reflects the university's dedication to fostering a sustainable future.

Objective

Atmiya University strives to establish a clean, green, and sustainable campus by:

- Developing, monitoring, and evaluating a policy to guide green campus initiatives.
- Reducing the ecological footprint through sustainable practices.
- Educating students and staff on environmental issues and on building harmony with nature & mother earth to create a healthier, sustainable future.
- Promoting innovative environmental practices to enhance sustainability performance.
- Strengthening an environmentally responsible culture across curricular and extracurricular activities.
- Addressing local and regional environmental challenges with sustainable solutions.
- Ensuring sustainable resource use and minimizing wasteful practices.
- Protecting biodiversity and reducing environmental pollution.

Environmental Goals and Targets

The university sets specific goals such as reducing energy consumption, minimizing waste generation, conserving water, managing/recycling/disposal of waste, and promoting biodiversity to enhance its sustainability initiatives.

Key Focus Areas

1. **Clean Campus Initiatives:** Regular cleaning drives, waste segregation, and beautification projects.

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2. **Green Energy**: Installing renewable energy sources to reduce dependency on non-renewable energy sources.
3. **Landscaping and Biodiversity**: Developing green spaces, planting neem trees, and conserving biodiversity.
4. **Energy Efficiency:** Installing energy-efficient appliances, natural lighting, and ventilation.
5. **Water Conservation:** Using rainwater harvesting systems, low-flow fixtures, and RO wastewater recycling.
6. **Waste Management**: Segregating solid, liquid, e-waste, and bio-waste for recycling and composting.
7. **Transportation and Mobility**: Promoting biking, carpooling, e-vehicles, and public transit.
8. **Green Building Standards**: Incorporating eco-friendly designs in construction and renovation projects.
9. **Curriculum Integration**: Courses on SDG awareness and environmental science across all disciplines.
10. **Community Engagement**: Conducting workshops, seminars, and outreach programs on environmental topics.

Key Practices

1. Energy Efficiency

- Transition to energy-efficient devices and systems.
- Encourage behaviour changes for energy conservation.
- Promote renewable energy solutions like solar and biogas.

2. Waste Management and Recycling

- Comprehensive waste management with dedicated recycling and composting units.
- Initiatives like **Parivartan (Paper Recycling Unit)** and **Sarjan (Agricultural Waste Recycling Unit)** to create sustainable products.

3. Water Conservation

- Installation of rainwater harvesting systems and reservoirs with a 17 lakh-litre capacity.
- Xeriscaping and responsible water usage to reduce dependency on municipal water.

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4. Biodiversity and Green Spaces

- Develop gardens, tree plantations, and outdoor educational spaces to promote biodiversity.
- Integrate sustainable farming practices using Panchgavya and Jivamrut fertilizers.

5. Transportation and Mobility

- Establish e-vehicle charging stations, bike racks, and pedestrian-friendly paths.

6. Education and Awareness

- Organize campaigns like **Use Solar-Save Nature**, **Save Energy-Water** and tree plantation drives.
- Include sustainability topics in the curriculum to foster awareness and innovation.

Implementation and Monitoring

- **Incentives and Recognition**: Reward active participants in sustainability efforts.
- **Budget and Funding**: Allocate resources for projects and seek grants for sustainability initiatives.
- **Compliance and Legal Adherence**: Ensure alignment with relevant environmental laws and regulations.
- **Periodic Review**: Monitor the policy's impact and revise based on feedback and emerging challenges.

Conclusion

Adopting this Policy highlights Atmiya University's unwavering commitment to environmental stewardship and sustainable development. By fostering a culture of awareness and proactive participation, the university aspires to create a greener and healthier campus, setting a benchmark for future generations. Together, we will build a resilient and sustainable future.

Atmiya University Rajkot

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6) General Information

a. Does any Green Audit conducted earlier? **Yes**

b. Total Area of the University = 84455 m^2

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

AY	Students			Teaching Staff			Non-Teaching Staff			Total		
	M	F	Trans	M	F	Trans	M	F	Trans	M	F	Trans
2020-2021	3399	1984	0	166	79	0	188	19	0	3753	2082	0

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

Month (AY- 2020-2021)	No. of Working Days
June	26
July	27
August	18
September	26
October	26
November	13
December	27
January	25
February	24
March	25
April	23
May	24
Total	**284**

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

Municipal dump yard	**No**
Garbage heap	**No**
Public convenience	**Yes**
Sewer line	**Yes**
Stagnant water	**No**
Industry	**No**
Bus / Railway station	**Yes**
Market / Shopping complex	**Yes**
Play Ground	**Yes**

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

Type of waste		**Response**	**Detail(s) of Waste Generated**	**Quantity of Waste Generated (kg)**
Solid	Biodegradable	Yes	Gardening, Cow dung	175
	Non-biodegradable	Yes	Sweeping waste,	10
	e-waste	Yes	Computer, Battery	1955
Liquid		Yes	Kitchen Waste	35
Gas		No	--	--

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

- Composting: Gardening and cow dung waste used to make compost.
- Non-recyclable and non biodegradable waste disposal is managed by the Rajkot Municipal Corporation.

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h. Do you use recycled paper in institute? Yes

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

Poster competition activities	**Yes**
Campaigns	**Yes**
Webinars and seminars	**Yes**

j. Is there a garden in your institute?

Garden	**Yes**	**Area = 6732.26m²**

k. Total number of Plants in Campus?

SN	Namepd Species	Numbers
1	Neem Tree	211
2	Lemon cypress	1
3	FicusMicrocapra	100
4	Hedge Plant	01
5	Tajplantshub dracaena	01
6	Crown of Throns	01
7	Spanish Moss (TilandsiaUsneoides)	10
8	Ruellia simplex	51
9	FagusSylvatica plant	01
10	Euphorbia Tithymaloides	11
11	Weeping Fig	685
12	LysilomaWatsonil	01
13	Royal Palm	38
14	Bamboo	230

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15	Moringa	01
16	Acalyphawilkesiana	300
17	Dracaena Angustifolia	11
18	*Polysciasscutellaria*	04
19	Cordylinefruticosa	40
20	Dracaena Reflexa	500
21	Garden Croton	01
22	polysciasguilfoylei	10
23	Oyster Plant (tradescantiazebrina)	300
24	Lonicerapileata	50
25	Saribusrotundifolius	10
26	Ixora	10
27	Hyophorbelagenicaulis	20
28	Purple heart	150
29	Yellow cosmos (sulphur cosmos)	100
30	Canna discolor	15
31	Durantaerecta	1100
32	Pritchardiapacifica	11
33	Capparissandwichiana	50
34	Nerium Oleander	10
35	Casuarinaequisetifolia	20
36	Caryotaurens	2
37	Areca palm	20

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38	Ravenala	10
39	Iresineherbstii	300
40	Sago Plam	22
41	Sphgniticolatrilobata	1500
42	Thuja	24
43	Dracaena trifasciata	62
44	Ponytail Palm	2
45	Asparagus densiflorus	50
46	Alocasiazebrina	02
47	Bismarck palm	8
49	Lotus	100
50	Catharanthus	50
51	Padavati Jasmin	50
52	Caryotamitis	04
53	Monoonlongifolium	3
54	Breyniadisticha	50
55	PlumeriaObtusa	10
56	Alovera	100
57	Century Plant	30
58	Sweet osmanthus	1
59	Crinum asiaticum	27
60	Diantherapectoralis	200
61	Hibiscus	10

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62	Ficusaspera	5
63	Mulberry tree	10
64	Barbary fig	5
65	Dracaena angolensis	2
66	Terminaliachebula plant	2
67	Nettlespurges	2
68	Yellow elder	2
69	MadhucaLongifolia	2
70	Eucalyptus globulus.	1
71	Melicoccusbijugatus	1
72	Casuarinaequisetifolia	1
73	Indian jujube	5
74	Tulsi	50
75	Coconut palm tree	8
76	Calotropisgigantea	1
77	Persian Silk	5
78	Mango tree	1
79	Curry Tree	4
80	Punicagranatum	5
81	Pandanusveitchii	50
82	Streblusasper	5
	Total	**6859**

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l. List uses of water in your institute

Basic use of water in campus	KL/Day
Drinking	3
Gardening	15
Kitchen and Toilets	4
Others	6
Hostel	4
Total	**32 KL/Day**

m. Electricity Consumed

Month (Academic Year 2020-2021)	Electricity Consumed (kWh)
June	1,37,230
July	1,36,957
August	1,12,314
September	1,08,832
October	99,057
November	90,189
December	71,830
January	75,191
February	84,981
March	1,17,450
April	1,39,358
May	1,01,102
Total	**12,74,491**

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

Building	SN	Tank Description	Size (liter)	No. of Tank	Capacity (liter)
AU Building	1	Raw Water- A Wing	2500	4	10000
	2	Raw Water- B Wing	2500	4	10000
	3	Master RO - Raw Water	5000	3	15000
	4	RO Water Tank	2500	7	17500
	5	Pharmacy and Mechanical Lab	2000	1	2000
	6	Faculty Block (A& B Wing)	2500	2	5000
	7	Library Terrace	2000	1	2000
	8	Raw Water Near AU Building- Underground	275000	1	275000
MPAB	9	RO Water - at Terrace	2000	2	4000
	10	Raw Water- at Terrace	60000	1	60000
	11	Raw Water- at Terrace	40000	7	280000
	12	Near Building- Undrground	333746	2	667492
	13	Near Building- Undrground	336826	2	673652
	14	Below Temple- Underground	189924	1	189924
	15	Below Temple- Underground	43718	1	43718
	16	In Front of Store- Underground	123604	1	123604

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Workshop	17	RO Water- at Terrace	2000	1	2000
	18	Raw Water- at Terrace	2000	2	4000
	19	Raw Warer- at Terrace	5000	1	5000
	20	Behind Workshop- Round Tank- Underground	45650	1	45650
Science Building	21	RO Water- at Terrace	2500	1	2500
	22	Raw Water Tank- at Terrace	23300	2	46600
	23	Raw Water Tank- Ladies Toilet	30000	3	90000
	24	CIF Lab	1500	1	1500
	25	Raw Water- OTIS- Underground	32620	1	32620
	26	Wastewater- Outside the Building	2000	1	2000
Yogidham Gate	27	Raw Water Tank- Underground	48750	4	195000
Niramay	28	RO Water Tanki at Terrace	2500	1	2500
	29	Raw Water Tank- at Terrace	11650	1	11650
	30	Raw Water Tank- Near Office	5000	2	10000
Sarva naman	31	Raw Water Tank- at Terrace	2000	1	2000
	32	Raw Water Tank- at Terrace	8550	1	8550
	33	Raw Water- inside building	600	1	600
Total Water Storage Capacity					**28,41,060**

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7) Green Initiatives By the Institute

Green Architecture

The incorporation of green architecture principles in academic institutions not only reduces environmental impact but also fosters a healthier and more inspiring learning environment for students and faculty alike. By integrating features such as passive solar design, natural ventilation, and green roofs, these institutions showcase a commitment to sustainability while promoting innovation and awareness of eco-friendly design practices within the academic community.

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Natural Light and Ventilation in Academic Building

Impact:

- Low artificial lighting requirements
- Energy consumption optimization
- Low green house gas emission
- Low level of strain to Eyes

Campus Biodiversity

A thriving campus biodiversity in academic institutions is not merely a reflection of ecological health but also serves as a testament to the institution's commitment to sustainability and environmental stewardship. It provides a living laboratory for students to engage with nature firsthand, fostering a deeper understanding of ecological systems and instilling a sense of responsibility towards conservation. Beyond its educational value, a biodiverse campus offers numerous benefits such as improved air and water quality, enhanced aesthetics, and increased resilience to environmental stressors. It becomes a sanctuary for wildlife, contributing to the preservation of local ecosystems and biodiversity at large. Atmiya University campus is a rich in the biodiversity with the full of greenery and in house terrace garden.

Glimpse of Flora at University Campus

Gaushala at Campus

- 12 Indian Breed Cow
- 01 Bull
- State of the art facilities
- Value addition cow urine for herbal and fertilizer utilization
- Decorative products are being made from the cow dung.
- Jivamrut fertilizer being used in the campus is a product of gaushala.
- It contibutes to maintain the organic carbon content in the campus soil as it provides the raw material for the compost.

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Satyakam Gaushala

It provides students with firsthand experience in animal care, veterinary science, and sustainable agriculture. They can learn about the importance of cows in Indian culture, their significance in agriculture, and sustainable farming practices.

Gaushalas contributes to the eco-friendly practices like composting cow dung for fertilizer, using biogas for cooking which can serve as models for sustainable living and agriculture.

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In Indian cultures, cows are revered as sacred animals. Having a gaushala on campus can help preserve and promote this cultural heritage among students and the community.

Universities can conduct research on various aspects of cow rearing, including breeding, nutrition, and healthcare. This research can contribute to advancements in animal science and agriculture.

Cows play a crucial role in maintaining soil fertility through their dung, which is rich in nutrients. By managing cow waste effectively, gaushalas can contribute to soil health and environmental conservation.

Solid Waste Management

Natural Fertilizer from Organic Waste

Jivamrut (Natural Fertilizer)

Installation Detail:

- Year: 2008
- Place: at boys parking
- Process: Collect neem leaves form campus and added with cow dung, cow urine and Earthworms

Amrut Soil

- Ingredients for AmrutMitti range from cow dung, cow urine, biomass like dry and decayed leaves, household kitchen waste like vegetable peels.
- AmrutSoil is full of all nutrients needed by plants, is very rich in variety of microbes, has the right pH, has high carbon content, has excellent water holding capacity.
- Mixing Cow dung, cow urine and jaggery
- Immersing dry biomass in AmrutJal kept in drums
- Process take at least 1 month
- Use as garden fertilizer.

Impact:

- Applied in garden as fertilizer
- Improve soil micro-biota of campus soil
- Less usages of chemical fertilizer

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Amrut Soil and Jivamrut Plant

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Municipal Solid Waste Segregation Bin

Separate Dustbin for Recyclable and Non-Recyclable Waste

University campus having more the 100 solid waste collection dustbin design for the proper waste segregation. Waste paper is recycled at the in-house paper recycling facility and converted into the filter paper, envelope and other artistic and decorative products.

Having separate bins encourages people to sort their waste, making it easier to recycle materials such as paper, plastic, glass, and metal. This promotes a culture of recycling and reduces the amount of waste sent to landfills or incinerators.

Recycling materials reduces the need for raw materials, energy, and water required to manufacture new products. This conserves natural resources and reduces the environmental impact associated with extraction, processing, and transportation.

Implementing separate bins provides an opportunity for educational initiatives on waste management, recycling, and environmental stewardship. Students, faculty, and staff can learn about the importance of recycling and how their actions contribute to sustainability.

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Paper Recycling Unit

In embracing the principles of the circular economy, Atmiya university is pioneer in sustainable practices such as paper recycling, ensuring that resources are reused and regenerated rather than disposed of after single use. By implementing robust paper recycling programs, these institutes not only reduce waste and environmental impact but also cultivate a culture of resource efficiency and responsible consumption among students, faculty, and staff.

Recycling paper can lead to cost savings for the university by reducing waste disposal fees and the need to purchase new paper products. This can free up financial resources that can be allocated to other campus initiatives or projects.

Parivartan- Paper Recycling Plant

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Plastic Water Bottle Recycling Plant

University have installed water bottle recycling plant at entrance for all stakeholders having capacity of 20 kg/day

A bottle crusher helps reduce the volume of plastic bottles, thereby decreasing the amount of plastic waste generated on campus. This contributes to waste reduction efforts and helps minimize the environmental impact of plastic pollution.

By providing a convenient way to crush plastic bottles, the crusher encourages recycling behavior among students, faculty, and staff. It reinforces the importance of recycling and helps divert plastic waste from landfills or incinerators.

Plastic pollution poses significant threats to ecosystems, wildlife, and human health. By reducing plastic waste through recycling, a bottle crusher helps protect the environment and minimize the adverse effects of plastic pollution on marine life, terrestrial habitats, and waterways.

Plastic Bottle Crusher Machine

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Energy Conservation Measures

Renewable Power Generation

The adoption of solar rooftop systems in Atmiya university significantly reduces carbon emissions, contributing to a cleaner and more sustainable environment while serving as a tangible demonstration of the institute's commitment to renewable energy and climate action. Additionally, the integration of solar rooftops enhances the educational experience by providing real-world examples of sustainable technology, inspiring students to explore and innovate in the field of renewable energy. Atmiya University having fully operational solar rooftop electricity generation capacity as per the vision of the government.

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Rooftop Solar Plant

Renewable Power Generation per Month

Month & Year	RE Cultivation in KWh
Jun-20	22,195
Jul-20	21,712
Aug-20	14,434
Sep-20	22,112
Oct-20	25,762
Nov-20	22,129
Dec-20	22,270
Jan-21	24,591
Feb-21	23,961
Mar-21	28,130
Apr-21	24,533
May-21	22,452
Total	**2,74,281**

Environmental Audit & Consultancy Cell,
V.V.P. Engineering College, Rajkot

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Energy Efficient Electrical Appliances

Energy-efficient infrastructure in institutions not only lowers operational costs but also serves as a beacon of sustainable practices, showcasing the institution's dedication to environmental stewardship and responsible resource management. By implementing measures such as LED lighting, efficient HVAC systems, and smart building technologies, these institutions demonstrate leadership in sustainability while providing a conducive learning environment for students and faculty.

LED Lighting and 5 Star Rated Appliances

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Water Management

Water conservation is a key activity as water availability affects on the development of the campus as well as on all area of development such as farming, industries, etc. Keeping this view water conservation activity is carried out.

Sources of Water

- Rainwater Harvesting
- Bore water
- A Main source of water is RMC connection and Ground water is extracted to fulfill the requirement. The University stores the water in overhead tank.

Sewage Disposal Facility

Atmiya University is situated in the municipal area of Rajkot. RMC (Rajkot Municipal Corporation) provides municipal facilities to the university. Sewage is being disposed in the sewerage network of Rajkot city.

RO Plant

RO plants provide clean and safe drinking water by removing contaminants, such as bacteria, viruses, and dissolved solids, from the water. This ensures that students, faculty, and staff have access to safe drinking water, promoting better health and well-being. With access to clean drinking water on campus, there is less reliance on bottled water. This can lead to a significant reduction in plastic waste generated by the university, contributing to environmental sustainability efforts.

Reverse Osmosis Plant for Drinking Water

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Rainwater Harvesting

Capacity : 12 Lac Liters

Environmental Benefits: By reducing the demand for potable water and minimizing stormwater runoff, rainwater harvesting contributes to environmental conservation efforts. It helps preserve freshwater resources, protects aquatic ecosystems, and mitigates the impacts of urbanization on natural hydrological cycles.

Water Conservation: Rainwater harvesting reduces reliance on traditional water sources by collecting and storing rainwater for various uses, such as irrigation, flushing toilets, and landscape maintenance. This helps conserve freshwater resources and reduces the strain on municipal water supplies, especially during periods of drought or water scarcity.

Rainwater Harvesting Tank

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Air Pollution Control Measures

Acidic Fume Suction Panel

Laboratory of chemistry department is equipped with the vapour suction panel mounted on the platform. It collects the hazardous gas and channelizes it to the wet scrubber for the neutralizing before discharge into the atmosphere.

Acidic Fume Suction Panel

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Fume Hood at Chemistry laboratory

Fume hoods are designed to contain and exhaust potentially hazardous fumes, vapors, and gases generated during chemical experiments. They create a barrier between the experiment and the laboratory environment, preventing exposure to toxic or harmful substances. Fume hoods protect laboratory personnel from inhaling harmful chemicals or being exposed to hazardous substances.

Fumehood at Chemistry Laboratory

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Wet Scrubber

1. **Reduction of Air Pollution:** Scrubbers help remove harmful gases, such as hydrogen chloride (HCl) and hydrogen fluoride (HF), from the laboratory air. By capturing these pollutants before they are released into the atmosphere, scrubbers contribute to reducing air pollution and improving indoor and outdoor air quality.

2. **Prevention of Acid Rain Formation:** Hydrogen chloride and hydrogen fluoride emissions can contribute to the formation of acid rain when released into the atmosphere. Alkali gas scrubbers mitigate this environmental impact by removing these acidic gases from laboratory emissions before they can react with moisture in the air and contribute to acid rain formation.

3. **Protection of Ecosystems:** Acid rain resulting from air pollution can have detrimental effects on ecosystems, including damage to vegetation, soil, aquatic habitats, and wildlife. By reducing the emission of acidic gases, alkali gas scrubbers help protect sensitive ecosystems and promote biodiversity conservation.

4. **Minimization of Health Risks:** Hydrogen chloride and hydrogen fluoride are corrosive and toxic gases that can pose health risks to laboratory personnel and surrounding communities if released into the environment. Alkali gas scrubbers help minimize these risks by capturing and neutralizing these hazardous pollutants before they can be emitted.

5. **Reduction of Odors:** In addition to removing acidic gases, alkali gas scrubbers can also help eliminate unpleasant odors associated with certain chemical processes in the laboratory. This improvement in air quality enhances the comfort and well-being of laboratory personnel and visitors.

6. **Conservation of Resources:** Alkali gas scrubbers typically utilize alkaline solutions, such as sodium hydroxide (NaOH), to neutralize acidic gases. While the operation of scrubbers requires resources such as water and chemicals, their use

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contributes to the conservation of environmental resources by preventing the release of pollutants into the air and minimizing the need for remediation measures.

Wet Gas Scrubber

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Tree Plantation

University campus is full of indigenous tree and medicinal plants produce positive impact on environment.

- Air Quality Improvement: Trees and plants act as natural air filters, absorbing carbon dioxide (CO_2) and other pollutants from the air while releasing oxygen through the process of photosynthesis. This helps improve air quality on campus, reducing the concentration of harmful gases and particulate matter and promoting a healthier environment for students, faculty, and staff.

- Carbon Sequestration: Trees play a crucial role in mitigating climate change by sequestering carbon from the atmosphere and storing it in their biomass. By planting trees on campus, universities can contribute to carbon sequestration efforts and help offset their carbon footprint, supporting broader sustainability goals and initiatives.

- Temperature Regulation: Trees provide natural shade and evapotranspiration, helping to cool the surrounding environment and reduce the urban heat island effect. By creating shaded areas and lowering ambient temperatures, trees

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contribute to energy conservation efforts by reducing the need for air conditioning and mitigating heat-related stress during hot weather.

- Storm water Management: The roots of trees and plants help absorb rainwater and reduce runoff, preventing soil erosion and minimizing the risk of flooding and water pollution. By incorporating green infrastructure such as rain gardens and bio swales, university campuses can effectively manage storm water runoff, improve water quality, and enhance overall watershed health.

- Biodiversity Conservation: Trees and plants provide habitat and food sources for various species of birds, insects, and other wildlife, contributing to biodiversity conservation on campus. By creating green corridors and natural habitats, universities support local ecosystems and promote ecological resilience in urban environments.

- Noise Reduction: Trees and vegetation help absorb and deflect sound waves, acting as natural buffers against noise pollution from nearby roads, buildings, and other sources. By planting trees strategically around campus buildings and outdoor spaces, universities can create quieter and more tranquil environments conducive to learning, research, and relaxation.

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8) Audit Methodology

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the document, interviewing responsible persons and data analysis, measurements and recommendations. The methodology adopted for this audit was a three-step process comprising of:

1. Data Collection – In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements.

Following steps were taken for data collection:

- Site Visit
- Data about the general information was collected by observation and interview.
- The power consumption of appliances was recorded by taking an average value in some cases.

2. Data Analysis - Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus, Water consumption, Waste Generation and Greenery Management.

3. Recommendation – On the basis of results of data analysis and observations, some steps for reducing power and water consumption were recommended. Proper treatments for waste were also suggested. Use of fossil fuels has to be reduced for the sake of community health.

The above target areas particular to the University was evaluated through questionnaire circulated among the students for data collection.

The following data collected for the following areas during the assessment.

1. Environment & Waste Management
2. Energy Management
3. Water Management

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9) Monitoring, Observations & Recommendations

Ambient Air Quality Monitoring

Date: 12/01/2021

Location	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)
AU Building Main Entrance	33.4	21.4	13.6	19.4
B/H Ashwad canteen	31.2	19.2	10.5	16.7
Nr. Bus parking	53.4	36.2	15.2	23.6
Nr. Haridarshanam Temple	57.8	39.4	19.8	25.8

Noise Monitoring

Date: 12/01/2021

Location	Observed Value (db (A))	Permissible Day Time Limit (db (A))
AU Building Main Entrance	45	50
B/H Ashwad canteen	43	
Nr. Bus parking	47	
Nr. Haridarshanam Temple	46	

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water from VIP parking Area
Sample collection Date	12/01/2021
Sample analysis date	12/01/2021
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.7	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	335	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	10.4	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	35.6	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 7 colonies)
MacConkey Plates	TLTC (< 3 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water near Yogidham Gate 3
Sample collection Date	12/01/2021
Sample analysis date	12/01/2021
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.7	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	223.6	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	11.08	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	35.0	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water near Boy's Hostel
Sample collection Date	12/01/2021
Sample analysis date	12/01/2021
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.68	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	323.5	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	24.5	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	32.5	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TMTC (> 100 colonies)
MacConkey Plates	TMTC (> 100 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water near Temple
Sample collection Date	12/01/2021
Sample analysis date	12/01/2021
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.7	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	330	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	8.10	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	54.3	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	TLTC (< 4 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- AU Main Building
Sample collection Date	12/01/2021
Sample analysis date	12/01/2021
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5)
3	**pH**	7.70	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	145.5	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	9.6	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	12.5	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- Science Building
Sample collection Date	12/01/2021
Sample analysis date	12/01/2021
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.7	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	135.2	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	7.8	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	15.6	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

*TLTC-Too Less To Count

* TMTC-Too Much To Count

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Observations & Suggestions:

1. University is situated in the heart of Rajkot city. Majority student commute by the personal vehicle. It is suggested that university should have more number of buses to promote pool commuting.
2. University have the state of the art laboratory facility for the environmental monitoring.
3. RO reject water is being utilized into the garden for the irrigation purpose. It is a very good initiative. To upgrade the water conservation one step ahead. It is recommended that university should go for the installation of sewage treatment plant.
4. University has provided separate dustbin for the recyclable and non-recyclable waste is a positive step towards the sustainability.
5. University is using the rainwater by storing it into the underground tank. It is recommended that create awareness in surrounding area about this good initiative
6. Currently biodegradable waste is being disposed by the composting. It can be upgraded to the biogas plant. This will improve resource utilization factor of waste.
7. The botanical garden is located within the campus to preserve local plat species.

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10) Certificate

V.V.P. ENGINEERING COLLEGE

ENVIRONMENTAL AUDIT CELL, Vajdi - Virda, Kalawad Road, Rajkot

Environmental Audit Certificate
Atmiya University, Rajkot-360005-Gujarat-India
For the AY (2020-21)

Environmental Audit for the period **June 2020 to May 2021** has been conducted for the **Atmiya University, Rajkot** to assess the green initiatives planning and efforts implemented in the college campus like Green Campus Management. This Environmental Audit is also aimed to assess eco-friendly initiatives of the Institute towards sustainability.
It is believed that the institution has presented authentic data on various aspects of working of the institute before the audit team. The recommendations are based on the data presented before the team as they existed at the audit time. This certificate is valid for the audit period only. However, it is subject to automatic cancellation in case of any change in prevailing green practice or misleading data. The findings reported in this audit report are entirely based on data furnished by the institute and data collected by the audit team during the audit. Thus, the findings reported in this audit report are strictly limited to the period when the audit was conducted.
The Environmental Quality in the campus is found **adequate and efficacious**.

Dr. Sushil Korgaokar *(Recognised Schedule-I Environmental Auditor, Gujarat Pollution Control Board-GPCB – Gandhinagar, Gujarat)* Environmental Audit Laboratory, V.V.P. Engineering College, Virda – Vajdi, Kalawad Road, Opp. Motel the Village, Rajkot-360005-Gujarat-India	V.V.P. Engineering College Environment Audit Cell Rajkot : 360 005

I assure that the data presented is authentic to the best of my knowledge & I agree to comply with the recommendations received this report within a year at maximum after the internal review.

Dr. Ashish M. Kothari, Dy. Registrar, Atmiya University, Rajkot-360005-Gujarat-India	Deputy Registrar Atmiya University Rajkot Atmiya University Rajkot

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1.5 Green/ Environment Audit 2021-22

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CONTENT

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1) Executive Summary

Atmiya University established on April 13, 2018, under the Gujarat Private University Act 11, 2018, ATMIYA University emphasizes to train young minds in consonance with the doctrines of higher education and human values. The aim of this University is to spread eternal happiness and to create a happy society in letter and spirit. The motto "सुहृदंसर्वभूतानम्" (Suhardam Sarva Bhootanam) is an expression of willingness to attain harmony with each creation of the Almighty!

This environmental audit report provides a comprehensive overview of Atmiya University, located in the vibrant city of Rajkot, Gujarat. Atmiya University, a prominent educational institution in the region, serves as a dynamic center for higher education, offering a diverse range of undergraduate, postgraduate, and doctoral programs. Established with a vision 'To nurture creative thinkers and leaders through transformative learning' and committed to create a transformative learning experience by imbibing domain specific knowledge & wisdom and to focus on research based teaching learning with Industry relevant application knowledge. The university plays a crucial role in shaping the region's educational landscape.

Situated in an urban setting, Atmiya University benefits from excellent connectivity and accessibility within the Rajkot area. The campus spans approximately 23.5 acre and features modern infrastructure that includes state-of-the-art classrooms, research labs, libraries, recreational facilities, and green spaces that enhance the learning environment.

The university accommodates a diverse and vibrant community from various parts of India and beyond. This thriving student body is supported by a faculty dedicated to promoting sustainable practices on campus, aligning with Atmiya University's mission to minimize its environmental impact.

A satellite image of the campus highlights its strategic layout and showcases the integration of natural and built environments, offering a visual perspective on the university's physical footprint within the urban landscape. This audit aims to evaluate Atmiya University's environmental practices and suggest actionable steps to enhance sustainability, further aligning with global standards in environmental responsibility and conservation.

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2) Acknowledgment

On behalf of the Environmental Audit & Consultancy Cell at **V.V.P. Engineering College, Rajkot**, we would like to express our sincere gratitude to the management of **Atmiya University, Rajkot** for entrusting us with the important task of conducting their Environmental Audit/Green Audit.

We deeply appreciate the cooperation extended by your team throughout the assessment process. This cooperation was instrumental in the successful completion of the audit.

We would also like to extend our special thanks to **Dr. Ashish Kothari. Deputy Registrar, Atmiya University** for their unwavering support. Their dedication proved to be invaluable in ensuring the project's completion. Finally, we thank all other staff members who actively participated in data collection and field measurements. Their contributions were essential to the smooth execution of the audit.

We are also thankful to:

SN	Name	Designation
1	Er. Ravi S. Tank	Chemical Engineer
2	Dr. Hemantkumar G. Sonkusare	Civil Engineer
3	Dr. Anilkumar S. Patel	Chemist

In closing, we would like to express our gratitude to **Dr. Shiv Tripathi, Vice Chancellor, Atmiya University** for extending the opportunity to evaluate their esteemed campus's environmental performance.

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3) Disclaimer

This Green Audit report has been prepared by the Environmental Audit **Cell at V.V.P. Engineering College, Rajkot for of Atmiya University, Rajkot**. It incorporates data submitted by University officials/representatives along with expert analysis by the EA&CC Audit team.

While all reasonable efforts have been made to ensure its accuracy, the report is based on information gathered in good faith. Conclusions are based on best estimates and do not constitute any express or implied warranty or undertaking. The EA&CC at Atmiya University, Rajkot assumes no responsibility for any direct or consequential loss arising from the use of the information, statements, or forecasts in this report.

The findings presented in this report are based entirely on data provided by Atmiya University and gathered by the audit team during their audit & monitoring visit. It assumes normal operating conditions within the institution throughout the audit period. The auditors are unable to comment on environmental audit parameters outside the scope of the on-site surveys. Consequently, the report's findings are strictly limited to the timeframe during which the audit team conducted its assessment.

The Environment Audit **Cell at V.V.P. Engineering College, Rajkot**, maintains strict confidentiality regarding all information pertaining to Atmiya University. No such information will be disclosed to any third party except public domain knowledge or when required by law or relevant accreditation bodies.

This certificate is valid solely for the current Environmental Audit/Green Audit report. It may be automatically revoked if any significant changes occur in the quantity or quality of waste generation at the aforementioned institute.

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4) Introduction

Since the 2019-20 academic year, the National Assessment and Accreditation Council (NAAC) requires all Higher Educational Institutions (HEIs) to submit an annual Environmental Audit/Green Audit report. This requirement falls under Criterion 7 of the NAAC accreditation process, which evaluates institutions for their environmental sustainability practices. NAAC, an autonomous body in India, assigns accreditation grades (A, B, or C) based on various criteria, including environmental stewardship.

Furthermore, conducting Environmental Audit/Green Audits aligns with the Corporate Social Responsibility (CSR) initiatives of HEIs. By implementing measures to reduce their carbon footprint, institutions contribute positively to mitigating global warming.

In response to the NAAC mandate, the University management opted for an external Environmental Audit/Green Audit conducted by a qualified professional auditor.

Environmental Audit/Green Audit entails a comprehensive environmental assessment, examining both on-campus and off-campus practices that directly or indirectly impact the environment. In essence, it is a systematic process of identifying, quantifying, recording, reporting, and analysing environmental aspects within the institute setting.

Environmental Audit/Green Audits originated as a tool to evaluate institutional activities that might pose risks to human health and the environment. It provides valuable insights for improvement, guiding institutions towards environmentally responsible practices and infrastructure.

The specific areas covered by this audit include Green Campus initiatives, Waste Management, Water Management, Air Pollution Control, Energy Management, and Carbon Footprint reduction strategies employed by the University.

The following sections delve deeper into the concept, structure, objectives, methodology, analytical tools, and overall goals of this Green Audit.

Educational institutions are increasingly prioritizing environmental concerns. As a result, innovative concepts are emerging to make campuses more sustainable and eco-friendly. Numerous institutions are adopting various approaches to address environmental challenges within their facilities, such as promoting

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energy conservation, waste recycling, water use reduction, and rainwater harvesting.

The activities of educational institutions can have both positive and negative environmental impacts. A Green Audit is a formal evaluation process that assesses the University's environmental footprint. It provides a comprehensive picture of the current environmental conditions on campus.

Green Audits are a valuable tool for Universities to identify areas of high energy, water, or resource consumption. This allows institutions to implement targeted changes and achieve cost savings. Additionally, Green Audits can analyse the nature and volume of waste generated, leading to improved recycling programs or waste minimization plans.

Green auditing and the implementation of mitigation measures offer a win-win scenario for institutions, students, and the environment. It can foster health and environmental awareness, promoting values and beliefs that benefit everyone. Green Audits also provide an opportunity for staff and students to gain a deeper understanding of the impact their institution has on the environment.

Furthermore, Green Audits can translate into financial savings by encouraging a reduction in resource usage. This process also empowers students and teachers to develop a sense of ownership for personal and social environmental responsibility.

The Green Audit process typically involves collecting primary data, conducting a site visit with University representatives, and reviewing relevant policies, activities, documents, and records.

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OBJECTIVE AND SCOPE

The broad aims/benefits of the Environmental Audit/Green Audit would be

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the University campus and its environment
- Enhancement of University profile
- Developing an environmental ethic and value systems in young people

Outcomes OF ENVIRONMENT AUDIT TO EDUCATIONAL INSTITUTIONS

There are many advantages of environment audit to an Educational Institute:

1. Protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Empower the organization to frame a better environmental performance.
4. Portrays good image of institution through its clean and green campus.

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5) Environmental Policy

ATMIYA UNIVERSITY
(Established under the Gujarat Private University Act 11, 2018)
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Environment and Sustainability Policy for Green Campus

Atmiya University recognizes the critical importance of environmental sustainability and its role in minimizing ecological footprints. Guided by its commitment to the principles of conservation and harmony with nature, the university adopts this Policy to integrate environmental awareness and sustainable practices into its daily academic and administrative operations, education, and community engagement. This policy reflects the university's dedication to fostering a sustainable future.

Objective

Atmiya University strives to establish a clean, green, and sustainable campus by:

- Developing, monitoring, and evaluating a policy to guide green campus initiatives.
- Reducing the ecological footprint through sustainable practices.
- Educating students and staff on environmental issues and on building harmony with nature & mother earth to create a healthier, sustainable future.
- Promoting innovative environmental practices to enhance sustainability performance.
- Strengthening an environmentally responsible culture across curricular and extracurricular activities.
- Addressing local and regional environmental challenges with sustainable solutions.
- Ensuring sustainable resource use and minimizing wasteful practices.
- Protecting biodiversity and reducing environmental pollution.

Environmental Goals and Targets

The university sets specific goals such as reducing energy consumption, minimizing waste generation, conserving water, managing/recycling/disposal of waste, and promoting biodiversity to enhance its sustainability initiatives.

Key Focus Areas

1. **Clean Campus Initiatives:** Regular cleaning drives, waste segregation, and beautification projects.

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2. **Green Energy**: Installing renewable energy sources to reduce dependency on non-renewable energy sources.
3. **Landscaping and Biodiversity**: Developing green spaces, planting neem trees, and conserving biodiversity.
4. **Energy Efficiency**: Installing energy-efficient appliances, natural lighting, and ventilation.
5. **Water Conservation**: Using rainwater harvesting systems, low-flow fixtures, and RO wastewater recycling.
6. **Waste Management**: Segregating solid, liquid, e-waste, and bio-waste for recycling and composting.
7. **Transportation and Mobility**: Promoting biking, carpooling, e-vehicles, and public transit.
8. **Green Building Standards**: Incorporating eco-friendly designs in construction and renovation projects.
9. **Curriculum Integration**: Courses on SDG awareness and environmental science across all disciplines.
10. **Community Engagement**: Conducting workshops, seminars, and outreach programs on environmental topics.

Key Practices

1. Energy Efficiency

- Transition to energy-efficient devices and systems.
- Encourage behaviour changes for energy conservation.
- Promote renewable energy solutions like solar and biogas.

2. Waste Management and Recycling

- Comprehensive waste management with dedicated recycling and composting units.
- Initiatives like **Parivartan (Paper Recycling Unit)** and **Sarjan (Agricultural Waste Recycling Unit)** to create sustainable products.

3. Water Conservation

- Installation of rainwater harvesting systems and reservoirs with a 17 lakh-litre capacity.
- Xeriscaping and responsible water usage to reduce dependency on municipal water.

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4. Biodiversity and Green Spaces

- Develop gardens, tree plantations, and outdoor educational spaces to promote biodiversity.
- Integrate sustainable farming practices using Panchgavya and Jivamrut fertilizers.

5. Transportation and Mobility

- Establish e-vehicle charging stations, bike racks, and pedestrian-friendly paths.

6. Education and Awareness

- Organize campaigns like **Use Solar-Save Nature, Save Energy-Water** and tree plantation drives.
- Include sustainability topics in the curriculum to foster awareness and innovation.

Implementation and Monitoring

- **Incentives and Recognition:** Reward active participants in sustainability efforts.
- **Budget and Funding:** Allocate resources for projects and seek grants for sustainability initiatives.
- **Compliance and Legal Adherence:** Ensure alignment with relevant environmental laws and regulations.
- **Periodic Review:** Monitor the policy's impact and revise based on feedback and emerging challenges.

Conclusion

Adopting this Policy highlights Atmiya University's unwavering commitment to environmental stewardship and sustainable development. By fostering a culture of awareness and proactive participation, the university aspires to create a greener and healthier campus, setting a benchmark for future generations. Together, we will build a resilient and sustainable future.

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6) **General Information**

a. Does any Green Audit conducted earlier? **Yes**

b. Total Area of the University = 84455 m^2

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

AY	Students			Teaching Staff			Non-Teaching Staff			Total		
	M	F	Trans	M	F	Trans	M	F	Trans	M	F	Trans
2021-2022	3952	2307	0	180	101	0	203	24	0	4308	2432	0

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

Month (AY- 2021-2022)	No. of Working Days
June	26
July	25
August	21
September	25
October	24
November	14
December	26
January	24
February	24
March	24
April	25
May	25
Total	**283**

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

Municipal dump yard	**No**
Garbage heap	**No**
Public convenience	**Yes**
Sewer line	**Yes**
Stagnant water	**No**
Industry	**No**
Bus / Railway station	**Yes**
Market / Shopping complex	**Yes**
Play Ground	**Yes**

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

Type of waste		**Response**	**Detail(s) of Waste Generated**	**Quantity of Waste Generated (kg)**
Solid	Biodegradable	Yes	Gardening, Cow dung	175
	Non-biodegradable	Yes	Sweeping waste,	10
	e-waste	Yes	Computer, Battery	498
Liquid		Yes	Kitchen Waste	35
Gas		No	--	--

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

- Composting: Gardening and cow dung waste used to make compost.
- Non-recyclable and non biodegradable waste disposal is managed by the Rajkot Municipal Corporation.

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h. Do you use recycled paper in institute? Yes

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

Poster competition activities	**Yes**
Campaigns	**Yes**
Webinars and seminars	**Yes**

j. Is there a garden in your institute?

Garden	**Yes**	**Area = 6732.26m²**

k. Total number of Plants in Campus?

SN	Namepd Species	Numbers
1	Neem Tree	211
2	Lemon cypress	1
3	FicusMicrocapra	100
4	Hedge Plant	01
5	Tajplantshub dracaena	01
6	Crown of Throns	01
7	Spanish Moss (TilandsiaUsneoides)	10
8	Ruellia simplex	51
9	FagusSylvatica plant	01
10	Euphorbia Tithymaloides	11
11	Weeping Fig	685
12	LysilomaWatsonil	01
13	Royal Palm	38
14	Bamboo	230

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15	Moringa	01
16	Acalyphawilkesiana	300
17	Dracaena Angustifolia	11
18	*Polysciasscutellaria*	04
19	Cordylinefruticosa	40
20	Dracaena Reflexa	500
21	Garden Croton	01
22	polysciasguilfoylei	10
23	Oyster Plant (tradescantiazebrina)	300
24	Lonicerapileata	50
25	Saribusrotundifolius	10
26	Ixora	10
27	Hyophorbelagenicaulis	20
28	Purple heart	150
29	Yellow cosmos (sulphur cosmos)	100
30	Canna discolor	15
31	Durantaerecta	1100
32	Pritchardiapacifica	11
33	Capparissandwichiana	50
34	Nerium Oleander	10
35	Casuarinaequisetifolia	20
36	Caryotaurens	2
37	Areca palm	20

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38	Ravenala	10
39	Iresineherbstii	300
40	Sago Plam	22
41	Sphgniticolatrilobata	1500
42	Thuja	24
43	Dracaena trifasciata	62
44	Ponytail Palm	2
45	Asparagus densiflorus	50
46	Alocasiazebrina	02
47	Bismarck palm	8
49	Lotus	100
50	Catharanthus	50
51	Padavati Jasmin	50
52	Caryotamitis	04
53	Monoonlongifolium	3
54	Breyniadisticha	50
55	PlumeriaObtusa	10
56	Alovera	100
57	Century Plant	30
58	Sweet osmanthus	1
59	Crinum asiaticum	27
60	Diantherapectoralis	200
61	Hibiscus	10

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62	Ficusaspera	5
63	Mulberry tree	10
64	Barbary fig	5
65	Dracaena angolensis	2
66	Terminaliachebula plant	2
67	Nettlespurges	2
68	Yellow elder	2
69	MadhucaLongifolia	2
70	Eucalyptus globulus.	1
71	Melicoccusbijugatus	1
72	Casuarinaequisetifolia	1
73	Indian jujube	5
74	Tulsi	50
75	Coconut palm tree	8
76	Calotropisgigantea	1
77	Persian Silk	5
78	Mango tree	1
79	Curry Tree	4
80	Punicagranatum	5
81	Pandanusveitchii	50
82	Streblusasper	5
	Total	**6859**

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l. List uses of water in your institute

Basic use of water in campus	KL/Day
Drinking	**15**
Gardening	**16**
Kitchen and Toilets	**20**
Others	**15**
Hostel	**29**
Total	**95 KL/Day**

m. Electricity Consumed

Month (Academic Year 2021-2022)	Electricity Consumed (kWh)
June	1,27,441
July	1,23,038
August	1,37,624
September	1,30,520
October	2,05,468
November	1,31,539
December	1,23,882
January	1,19,806
February	1,08,850
March	1,26,729
April	1,67,857
May	1,73,992
Total	**16,76,746**

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

Building	SN	Tank Description	Size (liter)	No. of Tank	Capacity (liter)
AU Building	1	Raw Water- A Wing	2500	4	10000
	2	Raw Water- B Wing	2500	4	10000
	3	Master RO - Raw Water	5000	3	15000
	4	RO Water Tank	2500	7	17500
	5	Pharmacy and Mechanical Lab	2000	1	2000
	6	Faculty Block (A& B Wing)	2500	2	5000
	7	Library Terrace	2000	1	2000
	8	Raw Water Near AU Building- Underground	275000	1	275000
MPAB	9	RO Water - at Terrace	2000	2	4000
	10	Raw Water- at Terrace	60000	1	60000
	11	Raw Water- at Terrace	40000	7	280000
	12	Near Building- Undrground	333746	2	667492
	13	Near Building- Undrground	336826	2	673652
	14	Below Temple- Underground	189924	1	189924
	15	Below Temple- Underground	43718	1	43718
	16	In Front of Store- Underground	123604	1	123604

Environmental Audit & Consultancy Cell,
V.V.P. Engineering College, Rajkot

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Workshop	17	RO Water- at Terrace	2000	1	2000
	18	Raw Water- at Terrace	2000	2	4000
	19	Raw Warer- at Terrace	5000	1	5000
	20	Behind Workshop- Round Tank- Underground	45650	1	45650
Science Building	21	RO Water- at Terrace	2500	1	2500
	22	Raw Water Tank- at Terrace	23300	2	46600
	23	Raw Water Tank- Ladies Toilet	30000	3	90000
	24	CIF Lab	1500	1	1500
	25	Raw Water- OTIS- Underground	32620	1	32620
	26	Wastewater- Outside the Building	2000	1	2000
Yogidham Gate	27	Raw Water Tank- Underground	48750	4	195000
Niramay	28	RO Water Tanki at Terrace	2500	1	2500
	29	Raw Water Tank- at Terrace	11650	1	11650
	30	Raw Water Tank- Near Office	5000	2	10000
Sarva naman	31	Raw Water Tank- at Terrace	2000	1	2000
	32	Raw Water Tank- at Terrace	8550	1	8550
	33	Raw Water- inside building	600	1	600
Total Water Storage Capacity					**28,41,060**

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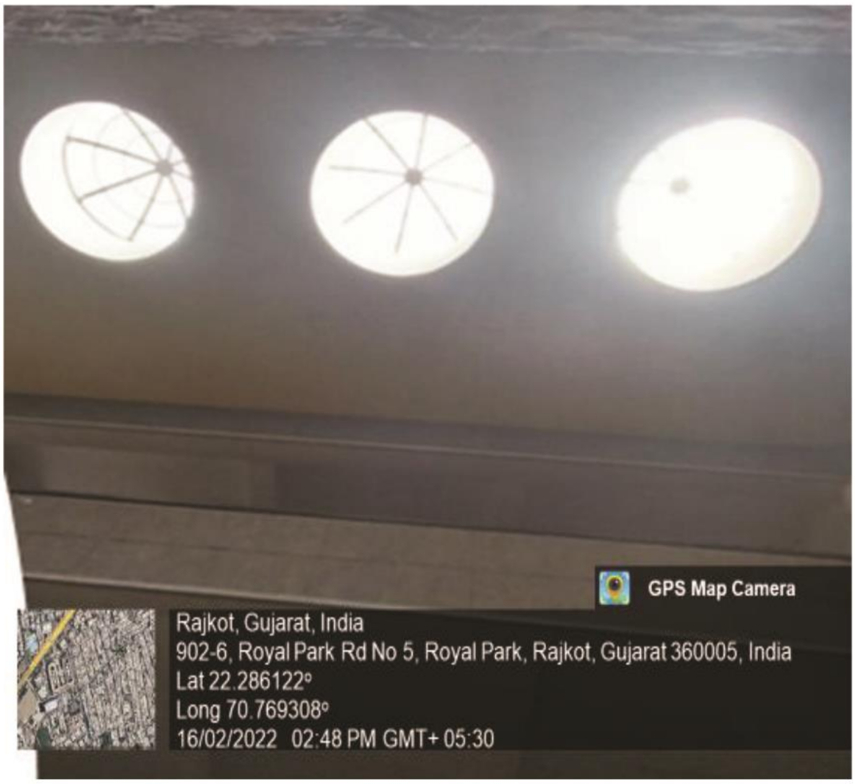
7) Green Initiatives By the Institute

Green Architecture

The incorporation of green architecture principles in academic institutions not only reduces environmental impact but also fosters a healthier and more inspiring learning environment for students and faculty alike. By integrating features such as passive solar design, natural ventilation, and green roofs, these institutions showcase a commitment to sustainability while promoting innovation and awareness of eco-friendly design practices within the academic community.



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Natural Light and Ventilation in Academic Building

Impact:

- Low artificial lighting requirements
- Energy consumption optimization
- Low green house gas emission
- Low level of strain to Eyes

Campus Biodiversity

A thriving campus biodiversity in academic institutions is not merely a reflection of ecological health but also serves as a testament to the institution's commitment to sustainability and environmental stewardship. It provides a living laboratory for students to engage with nature firsthand, fostering a deeper understanding of ecological systems and instilling a sense of responsibility towards conservation. Beyond its educational value, a biodiverse campus offers numerous benefits such as improved air and water quality, enhanced aesthetics, and increased resilience to environmental stressors. It becomes a sanctuary for wildlife, contributing to the preservation of local ecosystems and biodiversity at large. Atmiya University campus is a rich in the biodiversity with the full of greenery and in house terrace garden.

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Glimpse of Flora at University Campus

Gaushala at Campus

- 14 Indian Breed Cow
- 01 Bull
- State of the art facilities
- Value addition cow urine for herbal and fertilizer utilization
- Decorative products are being made from the cow dung.
- Jivamrut fertilizer being used in the campus is a product of gaushala.
- It contibutes to maintain the organic carbon content in the campus soil as it provides the raw material for the compost.

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Satyakam Gaushala

It provides students with firsthand experience in animal care, veterinary science, and sustainable agriculture. They can learn about the importance of cows in Indian culture, their significance in agriculture, and sustainable farming practices.

Gaushalas contributes to the eco-friendly practices like composting cow dung for fertilizer, using biogas for cooking which can serve as models for sustainable living and agriculture.

In Indian cultures, cows are revered as sacred animals. Having a gaushala on campus can help preserve and promote this cultural heritage among students and the community.

Universities can conduct research on various aspects of cow rearing, including breeding, nutrition, and healthcare. This research can contribute to advancements in animal science and agriculture.

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Cows play a crucial role in maintaining soil fertility through their dung, which is rich in nutrients. By managing cow waste effectively, gaushalas can contribute to soil health and environmental conservation.

Solid Waste Management

Natural Fertilizer from Organic Waste

Jivamrut (Natural Fertilizer)

Installation Detail:

- Year: 2008
- Place: at boys parking
- Process: Collect neem leaves form campus and added with cow dung, cow urine and Earthworms

Amrut Soil

- Ingredients for AmrutMitti range from cow dung, cow urine, biomass like dry and decayed leaves, household kitchen waste like vegetable peels.
- AmrutSoil is full of all nutrients needed by plants, is very rich in variety of microbes, has the right pH, has high carbon content, has excellent water holding capacity.
- Mixing Cow dung, cow urine and jaggery
- Immersing dry biomass in AmrutJal kept in drums
- Process take at least 1 month
- Use as garden fertilizer.

Impact:

- Applied in garden as fertilizer
- Improve soil micro-biota of campus soil
- Less usages of chemical fertilizer

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Amrut Soil and Jivamrut Plant

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Municipal Solid Waste Segregation Bin

Separate Dustbin for Recyclable and Non-Recyclable Waste

University campus having more the 100 solid waste collection dustbin design for the proper waste segregation. Waste paper is recycled at the in-house paper recycling facility and converted into the filter paper, envelope and other artistic and decorative products.

Having separate bins encourages people to sort their waste, making it easier to recycle materials such as paper, plastic, glass, and metal. This promotes a culture of recycling and reduces the amount of waste sent to landfills or incinerators.

Recycling materials reduces the need for raw materials, energy, and water required to manufacture new products. This conserves natural resources and reduces the environmental impact associated with extraction, processing, and transportation.

Implementing separate bins provides an opportunity for educational initiatives on waste management, recycling, and environmental stewardship. Students, faculty, and staff can learn about the importance of recycling and how their actions contribute to sustainability.

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Paper Recycling Unit

In embracing the principles of the circular economy, Atmiya university is pioneer in sustainable practices such as paper recycling, ensuring that resources are reused and regenerated rather than disposed of after single use. By implementing robust paper recycling programs, these institutes not only reduce waste and environmental impact but also cultivate a culture of resource efficiency and responsible consumption among students, faculty, and staff.

Recycling paper can lead to cost savings for the university by reducing waste disposal fees and the need to purchase new paper products. This can free up financial resources that can be allocated to other campus initiatives or projects.

Parivartan- Paper Recycling Plant

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Food Waste Management

The food waste generated inside the campus is diverted to a composting Plant on a daily basis.. An average of 25 kilos of food waste is generated per day. The compost generated from the organic waste composter machine is being used for gardening purpose within the campus. The excess waste is being collected by nearby farmer to make the compost.

ORCO Organic Waste Composter Machine

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Plastic Water Bottle Recycling Plant

University have installed water bottle recycling plant at entrance for all stakeholders having capacity of 20 kg/day

A bottle crusher helps reduce the volume of plastic bottles, thereby decreasing the amount of plastic waste generated on campus. This contributes to waste reduction efforts and helps minimize the environmental impact of plastic pollution.

By providing a convenient way to crush plastic bottles, the crusher encourages recycling behavior among students, faculty, and staff. It reinforces the importance of recycling and helps divert plastic waste from landfills or incinerators.

Plastic pollution poses significant threats to ecosystems, wildlife, and human health. By reducing plastic waste through recycling, a bottle crusher helps protect the environment and minimize the adverse effects of plastic pollution on marine life, terrestrial habitats, and waterways.

Plastic Bottle Crusher Machine

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Energy Conservation Measures

Renewable Power Generation

The adoption of solar rooftop systems in Atmiya university significantly reduces carbon emissions, contributing to a cleaner and more sustainable environment while serving as a tangible demonstration of the institute's commitment to renewable energy and climate action. Additionally, the integration of solar rooftops enhances the educational experience by providing real-world examples of sustainable technology, inspiring students to explore and innovate in the field of renewable energy. Atmiya University having fully operational solar rooftop electricity generation capacity as per the vision of the government.

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Rooftop Solar Plant

Renewable Power Generation per Month

Month & Year	RE Cultivation in KWh
Jun-21	20,781
Jul-21	9,458
Aug-21	8,619
Sep-21	0
Oct-21	37,696
Nov-21	43,792
Dec-21	39,408
Jan-22	48,137
Feb-22	55,776
Mar-22	47,232
Apr-22	36,176
May-22	35,568
Total	**3,82,643 WKh**

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Energy Efficient Electrical Appliances

Energy-efficient infrastructure in institutions not only lowers operational costs but also serves as a beacon of sustainable practices, showcasing the institution's dedication to environmental stewardship and responsible resource management. By implementing measures such as LED lighting, efficient HVAC systems, and smart building technologies, these institutions demonstrate leadership in sustainability while providing a conducive learning environment for students and faculty.

LED Lighting and 5 Star Rated Appliances

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Water Management

Water conservation is a key activity as water availability affects on the development of the campus as well as on all area of development such as farming, industries, etc. Keeping this view water conservation activity is carried out.

Sources of Water

- Rainwater Harvesting
- Bore water
- A Main source of water is RMC connection and Ground water is extracted to fulfill the requirement. The University stores the water in overhead tank.

Sewage Disposal Facility

Atmiya University is situated in the municipal area of Rajkot. RMC (Rajkot Municipal Corporation) provides municipal facilities to the university. Sewage is being disposed in the sewerage network of Rajkot city.

RO Plant

RO plants provide clean and safe drinking water by removing contaminants, such as bacteria, viruses, and dissolved solids, from the water. This ensures that students, faculty, and staff have access to safe drinking water, promoting better health and well-being. With access to clean drinking water on campus, there is less reliance on bottled water. This can lead to a significant reduction in plastic waste generated by the university, contributing to environmental sustainability efforts.

Reverse Osmosis Plant for Drinking Water

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Rainwater Harvesting

Capacity : 12 Lac Liters

Environmental Benefits: By reducing the demand for potable water and minimizing stormwater runoff, rainwater harvesting contributes to environmental conservation efforts. It helps preserve freshwater resources, protects aquatic ecosystems, and mitigates the impacts of urbanization on natural hydrological cycles.

Water Conservation: Rainwater harvesting reduces reliance on traditional water sources by collecting and storing rainwater for various uses, such as irrigation, flushing toilets, and landscape maintenance. This helps conserve freshwater resources and reduces the strain on municipal water supplies, especially during periods of drought or water scarcity.

Rainwater Harvesting Tank

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Air Pollution Control Measures

Acidic Fume Suction Panel

Laboratory of chemistry department is equipped with the vapour suction panel mounted on the platform. It collects the hazardous gas and channelizes it to the wet scrubber for the neutralizing before discharge into the atmosphere.

Acidic Fume Suction Panel

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Fume Hood at Chemistry laboratory

Fume hoods are designed to contain and exhaust potentially hazardous fumes, vapors, and gases generated during chemical experiments. They create a barrier between the experiment and the laboratory environment, preventing exposure to toxic or harmful substances. Fume hoods protect laboratory personnel from inhaling harmful chemicals or being exposed to hazardous substances.

Fumehood at Chemistry Laboratory

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Wet Scrubber

1. **Reduction of Air Pollution:** Scrubbers help remove harmful gases, such as hydrogen chloride (HCl) and hydrogen fluoride (HF), from the laboratory air. By capturing these pollutants before they are released into the atmosphere, scrubbers contribute to reducing air pollution and improving indoor and outdoor air quality.

2. **Prevention of Acid Rain Formation:** Hydrogen chloride and hydrogen fluoride emissions can contribute to the formation of acid rain when released into the atmosphere. Alkali gas scrubbers mitigate this environmental impact by removing these acidic gases from laboratory emissions before they can react with moisture in the air and contribute to acid rain formation.

3. **Protection of Ecosystems:** Acid rain resulting from air pollution can have detrimental effects on ecosystems, including damage to vegetation, soil, aquatic habitats, and wildlife. By reducing the emission of acidic gases, alkali gas scrubbers help protect sensitive ecosystems and promote biodiversity conservation.

4. **Minimization of Health Risks:** Hydrogen chloride and hydrogen fluoride are corrosive and toxic gases that can pose health risks to laboratory personnel and surrounding communities if released into the environment. Alkali gas scrubbers help minimize these risks by capturing and neutralizing these hazardous pollutants before they can be emitted.

5. **Reduction of Odors:** In addition to removing acidic gases, alkali gas scrubbers can also help eliminate unpleasant odors associated with certain chemical processes in the laboratory. This improvement in air quality enhances the comfort and well-being of laboratory personnel and visitors.

6. **Conservation of Resources:** Alkali gas scrubbers typically utilize alkaline solutions, such as sodium hydroxide (NaOH), to neutralize acidic gases. While the

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operation of scrubbers requires resources such as water and chemicals, their use contributes to the conservation of environmental resources by preventing the release of pollutants into the air and minimizing the need for remediation measures.

Wet Gas Scrubber

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Tree Plantation


Greenery at Atmiya University Campus

University campus is full of indigenous tree and medicinal plants produce positive impact on environment.

- Air Quality Improvement: Trees and plants act as natural air filters, absorbing carbon dioxide (CO2) and other pollutants from the air while releasing oxygen through the process of photosynthesis. This helps improve air quality on campus, reducing the concentration of harmful gases and particulate matter and promoting a healthier environment for students, faculty, and staff.

- Carbon Sequestration: Trees play a crucial role in mitigating climate change by sequestering carbon from the atmosphere and storing it in their biomass. By planting trees on campus, universities can contribute to carbon sequestration efforts and help offset their carbon footprint, supporting broader sustainability goals and initiatives.

- Temperature Regulation: Trees provide natural shade and evapotranspiration, helping to cool the surrounding environment and reduce the urban heat island effect. By creating shaded areas and lowering ambient temperatures, trees contribute to energy conservation efforts by reducing the need for air conditioning and mitigating heat-related stress during hot weather.

- Storm water Management: The roots of trees and plants help absorb rainwater and reduce runoff, preventing soil erosion and minimizing the risk of flooding and water pollution. By incorporating green infrastructure such as rain gardens and bio swales, university campuses can effectively manage storm water runoff, improve water quality, and enhance overall watershed health.

- Biodiversity Conservation: Trees and plants provide habitat and food sources for various species of birds, insects, and other wildlife, contributing to biodiversity conservation on campus. By creating green corridors and natural habitats, universities support local ecosystems and promote ecological resilience in urban environments.

- Noise Reduction: Trees and vegetation help absorb and deflect sound waves, acting as natural buffers against noise pollution from nearby roads, buildings, and other sources. By planting trees strategically around campus buildings and outdoor spaces, universities can create quieter and more tranquil environments conducive to learning, research, and relaxation.

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8) Audit Methodology

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the document, interviewing responsible persons and data analysis, measurements and recommendations. The methodology adopted for this audit was a three-step process comprising of:

1. Data Collection – In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements.

Following steps were taken for data collection:

- Site Visit
- Data about the general information was collected by observation and interview.
- The power consumption of appliances was recorded by taking an average value in some cases.

2. Data Analysis - Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus, Water consumption, Waste Generation and Greenery Management.

3. Recommendation – On the basis of results of data analysis and observations, some steps for reducing power and water consumption were recommended. Proper treatments for waste were also suggested. Use of fossil fuels has to be reduced for the sake of community health.

The above target areas particular to the University was evaluated through questionnaire circulated among the students for data collection.

The following data collected for the following areas during the assessment.

1. Environment & Waste Management
2. Energy Management
3. Water Management

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9) **Monitoring, Observations& Recommendations**

Ambient Air Quality Monitoring

Date: 16/02/2022

Location	PM_{10} (μg/m³)	$PM_{2.5}$ (μg/m³)	SO_2 (μg/m³)	NO_2 (μg/m³)
AU Building Main Entrance	43.4	23.4	14.1	23.1
B/H Ashwad canteen	46.3	26.2	13.2	20.3
Nr. Bus parking	63.5	39.2	17.7	26.1
Nr. Haridarshanam Temple	61.7	41.3	20.5	28.6

Noise Monitoring

Date: 16/02/2022

Location	Observed Value (db (A))	Permissible Day Time Limit (db (A))
AU Building Main Entrance	48	50
B/H Ashwad canteen	47	
Nr. Bus parking	49	
Nr. Haridarshanam Temple	45	

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water- VIP Parking Area
Sample collection Date	16/02/2022
Sample analysis date	16/02/2022
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.7	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	334	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	10.5	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	88.0	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 7 colonies)
MacConkey Plates	TLTC (< 3 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water - NearYogidham Gate 3
Sample collection Date	16/02/2022
Sample analysis date	16/02/2022
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.7	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	320.0	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	11.8	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	68.5	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water near Boy's Hostel
Sample collection Date	16/02/2022
Sample analysis date	16/02/2022
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.7	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	318.8	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	23.2	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	36.5	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TMTC (> 100 colonies)
MacConkey Plates	TMTC (> 100 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water near Temple
Sample collection Date	16/02/2022
Sample analysis date	16/02/2022
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.8	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	330	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	8.1	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	32.5	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	TLTC (< 4 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- AU Main Building
Sample collection Date	16/02/2022
Sample analysis date	16/02/2022
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.6	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	126	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	19.77	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	26.8	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- Science Building
Sample collection Date	16/02/2022
Sample analysis date	16/02/2022
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.7	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	117	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	17.30	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	23.9	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

*TLTC-Too Less To Count

* TMTC-Too Much To Count

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Observations & Suggestions:

- The University is having good Green belt including 500+ neem tree plantations inside the campus.
- The University building has very good ventilation for natural light.
- Numbers of Incinerators should be increased to manage sanitary waste.
- Increase the awareness activities regarding energy saving & environmental sustainability.
- As far as possible, avoid use of personal vehicles, single use plastics, water wastage, energy wastage, burning of bio-mass inside the University campus.
- Sensor lights to be installed in and around the premises of the University campus.

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10) Certificate

V.V.P. ENGINEERING COLLEGE

ENVIRONMENTAL AUDIT CELL, Vajdi - Virda, Kalawad Road, Rajkot

Environmental Audit Certificate

Atmiya University, Rajkot-360005-Gujarat-India
For the AY (2021-22)

Environmental Audit for the period **June 2021 to May 2022** has been conducted for the **Atmiya University, Rajkot** to assess the green initiatives planning and efforts implemented in the college campus like Green Campus Management. This Environmental Audit is also aimed to assess eco-friendly initiatives of the Institute towards sustainability.

It is believed that the institution has presented authentic data on various aspects of working of the institute before the audit team. The recommendations are based on the data presented before the team as they existed at the audit time. This certificate is valid for the audit period only. However, it is subject to automatic cancellation in case of any change in prevailing green practice or misleading data. The findings reported in this audit report are entirely based on data furnished by the institute and data collected by the audit team during the audit. Thus, the findings reported in this audit report are strictly limited to the period when the audit was conducted.

The Environmental Quality in the campus is found **adequate and efficacious.**

Dr. Sushil Korgaokar *(Recognised Schedule-I Environmental Auditor, Gujarat Pollution Control Board-GPCB – Gandhinagar, Gujarat)* Environmental Audit Laboratory, V.V.P. Engineering College, Virda – Vajdi, Kalawad Road, Opp. Motel the Village, Rajkot-360005-Gujarat-India	V.V.P. Engineering College Environment Audit Cell Rajkot : 360 005

I assure that the data presented is authentic to the best of my knowledge & I agree to comply with the recommendations received this report within a year at maximum after the internal review.

Dr. Ashish M. Kothari, Dy. Registrar, Atmiya University, Rajkot-360005-Gujarat-India	Deputy Registrar Atmiya University Rajkot Atmiya University Rajkot

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1.6 GREEN/ ENVIRONMENT AUDIT 2022-23

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CONTENT

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1) Executive Summary

Atmiya University established on April 13, 2018, under the Gujarat Private University Act 11, 2018, ATMIYA University emphasizes to train young minds in consonance with the doctrines of higher education and human values. The aim of this University is to spread eternal happiness and to create a happy society in letter and spirit. The motto "सुहृदंसर्वभूतानम्" (Suhardam Sarva Bhootanam) is an expression of willingness to attain harmony with each creation of the Almighty!

This environmental audit report provides a comprehensive overview of Atmiya University, located in the vibrant city of Rajkot, Gujarat. Atmiya University, a prominent educational institution in the region, serves as a dynamic center for higher education, offering a diverse range of undergraduate, postgraduate, and doctoral programs. Established with a vision 'To nurture creative thinkers and leaders through transformative learning' and committed to create a transformative learning experience by imbibing domain specific knowledge & wisdom and to focus on research based teaching learning with Industry relevant application knowledge. The university plays a crucial role in shaping the region's educational landscape.

Situated in an urban setting, Atmiya University benefits from excellent connectivity and accessibility within the Rajkot area. The campus spans approximately 23.5 acre and features modern infrastructure that includes state-of-the-art classrooms, research labs, libraries, recreational facilities, and green spaces that enhance the learning environment.

The university accommodates a diverse and vibrant community from various parts of India and beyond. This thriving student body is supported by a faculty dedicated to promoting sustainable practices on campus, aligning with Atmiya University's mission to minimize its environmental impact.

A satellite image of the campus highlights its strategic layout and showcases the integration of natural and built environments, offering a visual perspective on the university's physical footprint within the urban landscape. This audit aims to evaluate Atmiya University's environmental practices and suggest actionable steps to enhance sustainability, further aligning with global standards in environmental responsibility and conservation.

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2) Acknowledgment

On behalf of the Environmental Audit & Consultancy Cell at **V.V.P. Engineering College, Rajkot**, we would like to express our sincere gratitude to the management of **Atmiya University, Rajkot** for entrusting us with the important task of conducting their Environmental Audit/Green Audit.

We deeply appreciate the cooperation extended by your team throughout the assessment process. This cooperation was instrumental in the successful completion of the audit.

We would also like to extend our special thanks to **Dr. Ashish Kothari. Deputy Registrar, Atmiya University** for their unwavering support. Their dedication proved to be invaluable in ensuring the project's completion. Finally, we thank all other staff members who actively participated in data collection and field measurements. Their contributions were essential to the smooth execution of the audit.

We are also thankful to:

SN	Name	Designation
1	Er. Ravi S. Tank	Chemical Engineer
2	Dr. Hemantkumar G. Sonkusare	Civil Engineer
3	Dr. Anilkumar S. Patel	Chemist

In closing, we would like to express our gratitude to **Dr. Shiv Tripathi, Vice Chancellor, Atmiya University** for extending the opportunity to evaluate their esteemed campus's environmental performance.

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3) Disclaimer

This Green Audit report has been prepared by the Environmental Audit **Cell at V.V.P. Engineering College, Rajkot for of Atmiya University, Rajkot**. It incorporates data submitted by University officials/representatives along with expert analysis by the EA&CC Audit team.

While all reasonable efforts have been made to ensure its accuracy, the report is based on information gathered in good faith. Conclusions are based on best estimates and do not constitute any express or implied warranty or undertaking. The EA&CC at Atmiya University, Rajkot assumes no responsibility for any direct or consequential loss arising from the use of the information, statements, or forecasts in this report.

The findings presented in this report are based entirely on data provided by Atmiya University and gathered by the audit team during their audit & monitoring visit. It assumes normal operating conditions within the institution throughout the audit period. The auditors are unable to comment on environmental audit parameters outside the scope of the on-site surveys. Consequently, the report's findings are strictly limited to the timeframe during which the audit team conducted its assessment.

The Environment Audit **Cell at V.V.P. Engineering College, Rajkot**, maintains strict confidentiality regarding all information pertaining to Atmiya University. No such information will be disclosed to any third party except public domain knowledge or when required by law or relevant accreditation bodies.

This certificate is valid solely for the current Environmental Audit/Green Audit report. It may be automatically revoked if any significant changes occur in the quantity or quality of waste generation at the aforementioned institute.

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4) Introduction

Since the 2019-20 academic year, the National Assessment and Accreditation Council (NAAC) requires all Higher Educational Institutions (HEIs) to submit an annual Environmental Audit/Green Audit report. This requirement falls under Criterion 7 of the NAAC accreditation process, which evaluates institutions for their environmental sustainability practices. NAAC, an autonomous body in India, assigns accreditation grades (A, B, or C) based on various criteria, including environmental stewardship.

Furthermore, conducting Environmental Audit/Green Audits aligns with the Corporate Social Responsibility (CSR) initiatives of HEIs. By implementing measures to reduce their carbon footprint, institutions contribute positively to mitigating global warming.

In response to the NAAC mandate, the University management opted for an external Environmental Audit/Green Audit conducted by a qualified professional auditor.

Environmental Audit/Green Audit entails a comprehensive environmental assessment, examining both on-campus and off-campus practices that directly or indirectly impact the environment. In essence, it is a systematic process of identifying, quantifying, recording, reporting, and analysing environmental aspects within the institute setting.

Environmental Audit/Green Audits originated as a tool to evaluate institutional activities that might pose risks to human health and the environment. It provides valuable insights for improvement, guiding institutions towards environmentally responsible practices and infrastructure.

The specific areas covered by this audit include Green Campus initiatives, Waste Management, Water Management, Air Pollution Control, Energy Management, and Carbon Footprint reduction strategies employed by the University.

The following sections delve deeper into the concept, structure, objectives, methodology, analytical tools, and overall goals of this Green Audit.

Educational institutions are increasingly prioritizing environmental concerns. As a result, innovative concepts are emerging to make campuses more sustainable and eco-friendly. Numerous institutions are adopting various approaches to address environmental challenges within their facilities, such as promoting

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energy conservation, waste recycling, water use reduction, and rainwater harvesting.

The activities of educational institutions can have both positive and negative environmental impacts. A Green Audit is a formal evaluation process that assesses the University's environmental footprint. It provides a comprehensive picture of the current environmental conditions on campus.

Green Audits are a valuable tool for Universities to identify areas of high energy, water, or resource consumption. This allows institutions to implement targeted changes and achieve cost savings. Additionally, Green Audits can analyse the nature and volume of waste generated, leading to improved recycling programs or waste minimization plans.

Green auditing and the implementation of mitigation measures offer a win-win scenario for institutions, students, and the environment. It can foster health and environmental awareness, promoting values and beliefs that benefit everyone. Green Audits also provide an opportunity for staff and students to gain a deeper understanding of the impact their institution has on the environment.

Furthermore, Green Audits can translate into financial savings by encouraging a reduction in resource usage. This process also empowers students and teachers to develop a sense of ownership for personal and social environmental responsibility.

The Green Audit process typically involves collecting primary data, conducting a site visit with University representatives, and reviewing relevant policies, activities, documents, and records.

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OBJECTIVE AND SCOPE

The broad aims/benefits of the Environmental Audit/Green Audit would be

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the University campus and its environment
- Enhancement of University profile
- Developing an environmental ethic and value systems in young people

Outcomes OF ENVIRONMENT AUDIT TO EDUCATIONAL INSTITUTIONS

There are many advantages of environment audit to an Educational Institute:

1. Protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Empower the organization to frame a better environmental performance.
4. Portrays good image of institution through its clean and green campus.

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5) **Environmental Policy**

ATMIYA UNIVERSITY
(Established under the Gujarat Private University Act 11, 2018)
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Environment and Sustainability Policy for Green Campus

Atmiya University recognizes the critical importance of environmental sustainability and its role in minimizing ecological footprints. Guided by its commitment to the principles of conservation and harmony with nature, the university adopts this Policy to integrate environmental awareness and sustainable practices into its daily academic and administrative operations, education, and community engagement. This policy reflects the university's dedication to fostering a sustainable future.

Objective

Atmiya University strives to establish a clean, green, and sustainable campus by:

- Developing, monitoring, and evaluating a policy to guide green campus initiatives.
- Reducing the ecological footprint through sustainable practices.
- Educating students and staff on environmental issues and on building harmony with nature & mother earth to create a healthier, sustainable future.
- Promoting innovative environmental practices to enhance sustainability performance.
- Strengthening an environmentally responsible culture across curricular and extracurricular activities.
- Addressing local and regional environmental challenges with sustainable solutions.
- Ensuring sustainable resource use and minimizing wasteful practices.
- Protecting biodiversity and reducing environmental pollution.

Environmental Goals and Targets

The university sets specific goals such as reducing energy consumption, minimizing waste generation, conserving water, managing/recycling/disposal of waste, and promoting biodiversity to enhance its sustainability initiatives.

Key Focus Areas

1. **Clean Campus Initiatives:** Regular cleaning drives, waste segregation, and beautification projects.

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2. **Green Energy**: Installing renewable energy sources to reduce dependency on non-renewable energy sources.
3. **Landscaping and Biodiversity**: Developing green spaces, planting neem trees, and conserving biodiversity.
4. **Energy Efficiency**: Installing energy-efficient appliances, natural lighting, and ventilation.
5. **Water Conservation:** Using rainwater harvesting systems, low-flow fixtures, and RO wastewater recycling.
6. **Waste Management**: Segregating solid, liquid, e-waste, and bio-waste for recycling and composting.
7. **Transportation and Mobility:** Promoting biking, carpooling, e-vehicles, and public transit.
8. **Green Building Standards**: Incorporating eco-friendly designs in construction and renovation projects.
9. **Curriculum Integration:** Courses on SDG awareness and environmental science across all disciplines.
10. **Community Engagement**: Conducting workshops, seminars, and outreach programs on environmental topics.

Key Practices

1. Energy Efficiency

- Transition to energy-efficient devices and systems.
- Encourage behaviour changes for energy conservation.
- Promote renewable energy solutions like solar and biogas.

2. Waste Management and Recycling

- Comprehensive waste management with dedicated recycling and composting units.
- Initiatives like **Parivartan (Paper Recycling Unit)** and **Sarjan (Agricultural Waste Recycling Unit)** to create sustainable products.

3. Water Conservation

- Installation of rainwater harvesting systems and reservoirs with a 17 lakh-litre capacity.
- Xeriscaping and responsible water usage to reduce dependency on municipal water.

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4. Biodiversity and Green Spaces

- Develop gardens, tree plantations, and outdoor educational spaces to promote biodiversity.
- Integrate sustainable farming practices using Panchgavya and Jivamrut fertilizers.

5. Transportation and Mobility

- Establish e-vehicle charging stations, bike racks, and pedestrian-friendly paths.

6. Education and Awareness

- Organize campaigns like **Use Solar-Save Nature**, **Save Energy-Water** and tree plantation drives.
- Include sustainability topics in the curriculum to foster awareness and innovation.

Implementation and Monitoring

- **Incentives and Recognition**: Reward active participants in sustainability efforts.
- **Budget and Funding**: Allocate resources for projects and seek grants for sustainability initiatives.
- **Compliance and Legal Adherence**: Ensure alignment with relevant environmental laws and regulations.
- **Periodic Review**: Monitor the policy's impact and revise based on feedback and emerging challenges.

Conclusion

Adopting this Policy highlights Atmiya University's unwavering commitment to environmental stewardship and sustainable development. By fostering a culture of awareness and proactive participation, the university aspires to create a greener and healthier campus, setting a benchmark for future generations. Together, we will build a resilient and sustainable future.

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6) General Information

a. Does any Green Audit conducted earlier? **Yes**

b. Total Area of the University = 84455 m²

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

AY	Students			Teaching Staff			Non-Teaching Staff			Total		
	M	F	Trans	M	F	Trans	M	F	Trans	M	F	Trans
2022-2023	3776	2204	0	168	134	0	190	32	0	4134	2370	0

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

Month (AY- 2022-2023)	No. of Working Days
June	26
July	25
August	18
September	26
October	17
November	21
December	26
January	23
February	23
March	24
April	22
May	26
Total	**277**

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

Municipal dump yard	**No**
Garbage heap	**No**
Public convenience	**Yes**
Sewer line	**Yes**
Stagnant water	**No**
Industry	**No**
Bus / Railway station	**Yes**
Market / Shopping complex	**Yes**
Play Ground	**Yes**

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

Type of waste		**Response**	**Detail(s) of Waste Generated**	**Quantity of Waste Generated (kg)**
Solid	Biodegradable	Yes	Gardening, Cow dung	175
	Non-biodegradable	Yes	Sweeping waste,	10
	e-waste	Yes	Computer, Battery	00
Liquid		Yes	Kitchen Waste	35
Gas		No	--	--

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

- Composting: Gardening and cow dung waste used to make compost.
- Non-recyclable and non biodegradable waste disposal is managed by the Rajkot Municipal Corporation.

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h. Do you use recycled paper in institute? Yes

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

Poster competition activities	**Yes**
Campaigns	**Yes**
Webinars and seminars	**Yes**

j. Is there a garden in your institute?

Garden	**Yes**	**Area = 6732.26m²**

k. Total number of Plants in Campus?

SN	Namepd Species	Numbers
1	Neem Tree	211
2	Lemon cypress	1
3	FicusMicrocapra	100
4	Hedge Plant	01
5	Tajplantshub dracaena	01
6	Crown of Throns	01
7	Spanish Moss (TilandsiaUsneoides)	10
8	Ruellia simplex	51
9	FagusSylvatica plant	01
10	Euphorbia Tithymaloides	11
11	Weeping Fig	685
12	LysilomaWatsonil	01
13	Royal Palm	38
14	Bamboo	230

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15	Moringa	01
16	Acalyphawilkesiana	300
17	Dracaena Angustifolia	11
18	*Polysciasscutellaria*	04
19	Cordylinefruticosa	40
20	Dracaena Reflexa	500
21	Garden Croton	01
22	polysciasguilfoylei	10
23	Oyster Plant (tradescantiazebrina)	300
24	Lonicerapileata	50
25	Saribusrotundifolius	10
26	Ixora	10
27	Hyophorbelagenicaulis	20
28	Purple heart	150
29	Yellow cosmos (sulphur cosmos)	100
30	Canna discolor	15
31	Durantaerecta	1100
32	Pritchardiapacifica	11
33	Capparissandwichiana	50
34	Nerium Oleander	10
35	Casuarinaequisetifolia	20
36	Caryotaurens	2
37	Areca palm	20

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38	Ravenala	10
39	Iresineherbstii	300
40	Sago Plam	22
41	Sphgniticolatrilobata	1500
42	Thuja	24
43	Dracaena trifasciata	62
44	Ponytail Palm	2
45	Asparagus densiflorus	50
46	Alocasiazebrina	02
47	Bismarck palm	8
49	Lotus	100
50	Catharanthus	50
51	Padavati Jasmin	50
52	Caryotamitis	04
53	Monoonlongifolium	3
54	Breyniadisticha	50
55	PlumeriaObtusa	10
56	Alovera	100
57	Century Plant	30
58	Sweet osmanthus	1
59	Crinum asiaticum	27
60	Diantherapectoralis	200
61	Hibiscus	10

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62	Ficusaspera	5
63	Mulberry tree	10
64	Barbary fig	5
65	Dracaena angolensis	2
66	Terminaliachebula plant	2
67	Nettlespurges	2
68	Yellow elder	2
69	MadhucaLongifolia	2
70	Eucalyptus globulus.	1
71	Melicoccusbijugatus	1
72	Casuarinaequisetifolia	1
73	Indian jujube	5
74	Tulsi	50
75	Coconut palm tree	8
76	Calotropisgigantea	1
77	Persian Silk	5
78	Mango tree	1
79	Curry Tree	4
80	Punicagranatum	5
81	Pandanusveitchii	50
82	Streblusasper	5
	Total	**6859**

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l. List uses of water in your institute

Basic use of water in campus	KL/Day
Drinking	14
Gardening	16
Kitchen and Toilets	19
Others	14
Hostel	28
Total	**91 KL/Day**

m. Electricity Consumed

Month (Academic Year 2022-2023)	Electricity Consumed (kWh)
June	1,73,425
July	1,75,107
August	1,70,233
September	1,75,633
October	1,89,039
November	1,20,528
December	1,21,489
January	1,06,395
February	1,04,507
March	1,41,223
April	1,71,150
May	1,88,347
Total	**18,37,076**

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

Building	SN	Tank Description	Size (liter)	No. of Tank	Capacity (liter)
AU Building	1	Raw Water- A Wing	2500	4	10000
	2	Raw Water- B Wing	2500	4	10000
	3	Master RO - Raw Water	5000	3	15000
	4	RO Water Tank	2500	7	17500
	5	Pharmacy and Mechanical Lab	2000	1	2000
	6	Faculty Block (A& B Wing)	2500	2	5000
	7	Library Terrace	2000	1	2000
	8	Raw Water Near AU Building- Underground	275000	1	275000
MPAB	9	RO Water - at Terrace	2000	2	4000
	10	Raw Water- at Terrace	60000	1	60000
	11	Raw Water- at Terrace	40000	7	280000
	12	Near Building- Undrground	333746	2	667492
	13	Near Building- Undrground	336826	2	673652
	14	Below Temple- Underground	189924	1	189924
	15	Below Temple- Underground	43718	1	43718
	16	In Front of Store- Underground	123604	1	123604

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Workshop	17	RO Water- at Terrace	2000	1	2000
	18	Raw Water- at Terrace	2000	2	4000
	19	Raw Warer- at Terrace	5000	1	5000
	20	Behind Workshop- Round Tank- Underground	45650	1	45650
Science Building	21	RO Water- at Terrace	2500	1	2500
	22	Raw Water Tank- at Terrace	23300	2	46600
	23	Raw Water Tank- Ladies Toilet	30000	3	90000
	24	CIF Lab	1500	1	1500
	25	Raw Water- OTIS- Underground	32620	1	32620
	26	Wastewater- Outside the Building	2000	1	2000
Yogidham Gate	27	Raw Water Tank- Underground	48750	4	195000
Niramay	28	RO Water Tanki at Terrace	2500	1	2500
	29	Raw Water Tank- at Terrace	11650	1	11650
	30	Raw Water Tank- Near Office	5000	2	10000
Sarva naman	31	Raw Water Tank- at Terrace	2000	1	2000
	32	Raw Water Tank- at Terrace	8550	1	8550
	33	Raw Water- inside building	600	1	600
Total Water Storage Capacity					**28,41,060**

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7) Green Initiatives By the Institute

Green Architecture

The incorporation of green architecture principles in academic institutions not only reduces environmental impact but also fosters a healthier and more inspiring learning environment for students and faculty alike. By integrating features such as passive solar design, natural ventilation, and green roofs, these institutions showcase a commitment to sustainability while promoting innovation and awareness of eco-friendly design practices within the academic community.

Natural Light and Ventilation in Academic Building

Impact:

- Low artificial lighting requirements
- Energy consumption optimization
- Low green house gas emission
- Low level of strain to Eyes

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Campus Biodiversity

A thriving campus biodiversity in academic institutions is not merely a reflection of ecological health but also serves as a testament to the institution's commitment to sustainability and environmental stewardship. It provides a living laboratory for students to engage with nature firsthand, fostering a deeper understanding of ecological systems and instilling a sense of responsibility towards conservation. Beyond its educational value, a biodiverse campus offers numerous benefits such as improved air and water quality, enhanced aesthetics, and increased resilience to environmental stressors. It becomes a sanctuary for wildlife, contributing to the preservation of local ecosystems and biodiversity at large. Atmiya University campus is a rich in the biodiversity with the full of greenery and in house terrace garden.

Glimpse of Flora at University Campus

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Terrace Farming Capacity (Niramaya)

Installation Detail

- Total Area: 800 Square meter
- Three different farming: Hydroponics , Vertical and Terrace

Hydroponic farming

- method of growing plants without soil, using a nutrient-rich water solution to deliver essential nutrients directly to the plants' roots
- Tomato, Basil and mint grown by using this method.

Vertical farming

- vertical farming utilizes vertical space
- growing crops in vertically stacked layers
- Vertical farming reduces the need for extensive land use.

Terrace garden

- The following are grown in the terrace garden
- Grapes, Calabash and asparagus bean are grown using this method.

Impact of terrace farming

- Controlled environments can reduce the need for pesticides, as pests and diseases are less likely to affect crops grown indoors
- Terrace gardens act as natural insulators, reducing the need for artificial heating and cooling within the building. This can lead to energy savings and lower electricity bills.
- Students get the practical knowledge of terrace farming in the urban environment that can be replicated and implemented at their home and society.

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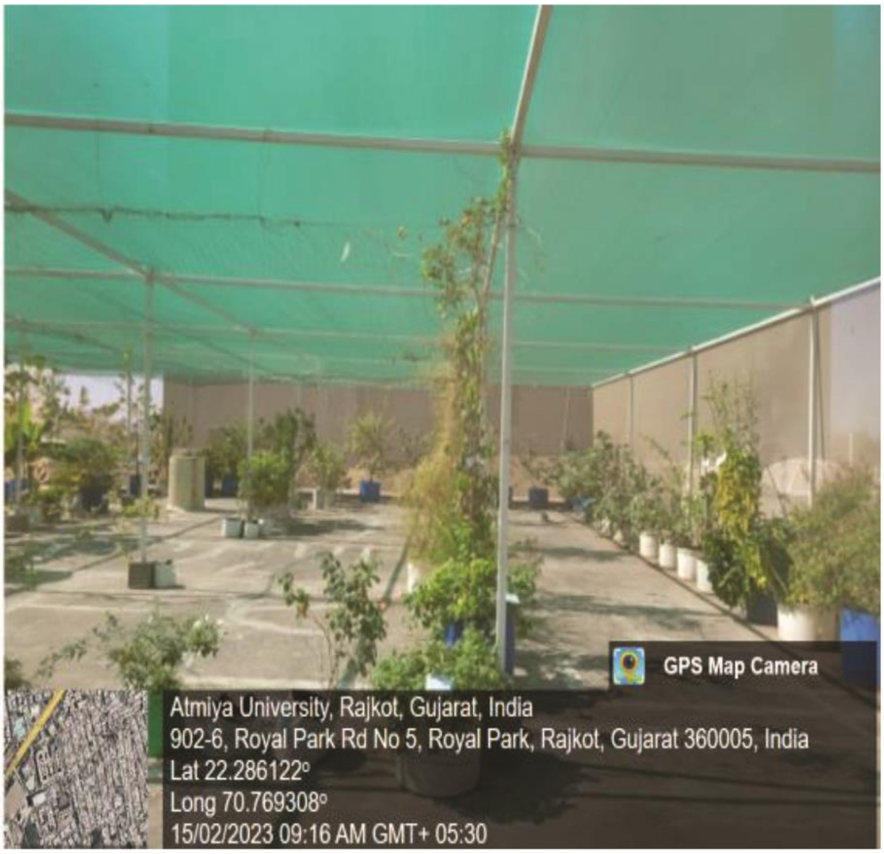

Terrace Garden (Niramay) at University Campus

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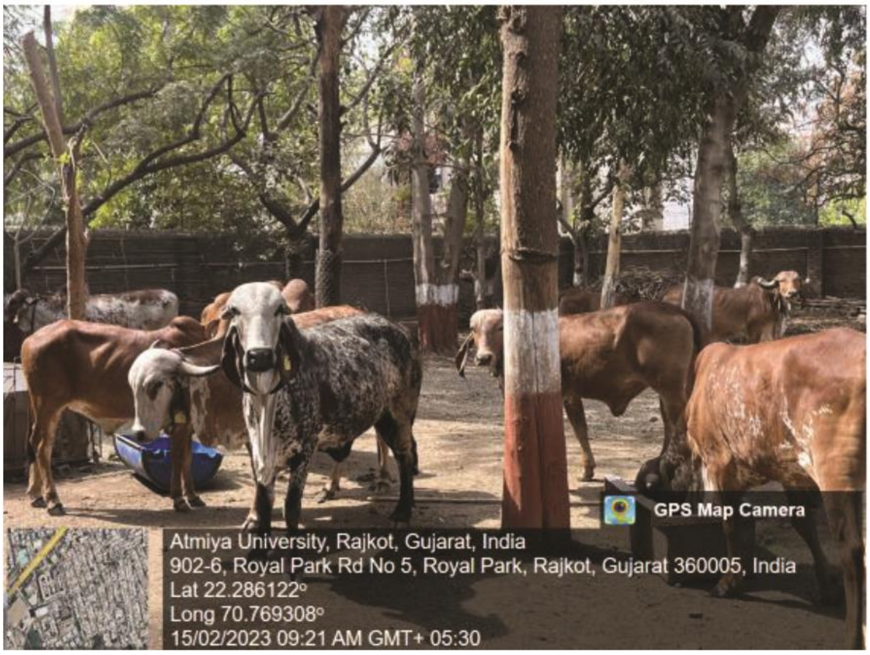
Gaushala at Campus

- 24 Indian Breed Cow
- 01 Bull
- State of the art facilities
- Value addition cow urine for herbal and fertilizer utilization
- Decorative products are being made from the cow dung.
- Jivamrut fertilizer being used in the campus is a product of gaushala.
- It contibutes to maintain the organic carbon content in the campus soil as it provides the raw material for the compost.



Satyakam Gaushala

It provides students with firsthand experience in animal care, veterinary science, and sustainable agriculture. They can learn about the importance of cows in Indian culture, their significance in agriculture, and sustainable farming practices.

Gaushalas contributes to the eco-friendly practices like composting cow dung for fertilizer, using biogas for cooking which can serve as models for sustainable living and agriculture.

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In Indian cultures, cows are revered as sacred animals. Having a gaushala on campus can help preserve and promote this cultural heritage among students and the community.

Universities can conduct research on various aspects of cow rearing, including breeding, nutrition, and healthcare. This research can contribute to advancements in animal science and agriculture.

Cows play a crucial role in maintaining soil fertility through their dung, which is rich in nutrients. By managing cow waste effectively, gaushalas can contribute to soil health and environmental conservation.

Solid Waste Management

Natural Fertilizer from Organic Waste

Jivamrut (Natural Fertilizer)

Installation Detail:

- Year: 2008
- Place: at boys parking
- Process: Collect neem leaves form campus and added with cow dung, cow urine and Earthworms

Amrut Soil

- Ingredients for AmrutMitti range from cow dung, cow urine, biomass like dry and decayed leaves, household kitchen waste like vegetable peels.
- AmrutSoil is full of all nutrients needed by plants, is very rich in variety of microbes, has the right pH, has high carbon content, has excellent water holding capacity.
- Mixing Cow dung, cow urine and jaggery
- Immersing dry biomass in AmrutJal kept in drums
- Process take at least 1 month
- Use as garden fertilizer.

Impact:

- Applied in garden as fertilizer
- Improve soil micro-biota of campus soil
- Less usages of chemical fertilizer

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Figure 6: Amrut Soil and Jivamrut Plant

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Municipal Solid Waste Segregation Bin

University campus having more the 100 solid waste collection dustbin design for the proper waste segregation. Waste paper is recycled at the in-house paper recycling facility and converted into the filter paper, envelope and other artistic and decorative products.

Having separate bins encourages people to sort their waste, making it easier to recycle materials such as paper, plastic, glass, and metal. This promotes a culture of recycling and reduces the amount of waste sent to landfills or incinerators.

Recycling materials reduces the need for raw materials, energy, and water required to manufacture new products. This conserves natural resources and reduces the environmental impact associated with extraction, processing, and transportation.

Implementing separate bins provides an opportunity for educational initiatives on waste management, recycling, and environmental stewardship. Students, faculty, and staff can learn about the importance of recycling and how their actions contribute to sustainability.

Separate Dustbin for Recyclable and Non-Recyclable Waste

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Paper Recycling Unit

In embracing the principles of the circular economy, Atmiya university is pioneer in sustainable practices such as paper recycling, ensuring that resources are reused and regenerated rather than disposed of after single use. By implementing robust paper recycling programs, these institutes not only reduce waste and environmental impact but also cultivate a culture of resource efficiency and responsible consumption among students, faculty, and staff.

Recycling paper can lead to cost savings for the university by reducing waste disposal fees and the need to purchase new paper products. This can free up financial resources that can be allocated to other campus initiatives or projects.

Parivartan- Paper Recycling Plant

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Plastic Water Bottle Recycling Plant

University have installed water bottle recycling plant at entrance for all stakeholders having capacity of 20 kg/day

A bottle crusher helps reduce the volume of plastic bottles, thereby decreasing the amount of plastic waste generated on campus. This contributes to waste reduction efforts and helps minimize the environmental impact of plastic pollution.

By providing a convenient way to crush plastic bottles, the crusher encourages recycling behavior among students, faculty, and staff. It reinforces the importance of recycling and helps divert plastic waste from landfills or incinerators.

Plastic pollution poses significant threats to ecosystems, wildlife, and human health. By reducing plastic waste through recycling, a bottle crusher helps protect the environment and minimize the adverse effects of plastic pollution on marine life, terrestrial habitats, and waterways.

Plastic Bottle Crusher Machine

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Energy Conservation Measures

Renewable Power Generation

The adoption of solar rooftop systems in Atmiya university significantly reduces carbon emissions, contributing to a cleaner and more sustainable environment while serving as a tangible demonstration of the institute's commitment to renewable energy and climate action. Additionally, the integration of solar rooftops enhances the educational experience by providing real-world examples of sustainable technology, inspiring students to explore and innovate in the field of renewable energy. Atmiya University having fully operational solar rooftop electricity generation capacity as per the vision of the government.

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Rooftop Solar Plant

Renewable Power Generation per Month

Month & Year	RE Cultivation in KWh
Jun-22	33,642
Jul-22	20,784
Aug-22	23,264
Sep-22	29,568
Oct-22	33,664
Nov-22	28,864
Dec-22	26,432
Jan-23	30,064
Feb-23	32,576
Mar-23	41,648
Apr-23	57,504
May-23	66,992
Total	4,25,002 KWh

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Energy Efficient Electrical Appliances

Energy-efficient infrastructure in institutions not only lowers operational costs but also serves as a beacon of sustainable practices, showcasing the institution's dedication to environmental stewardship and responsible resource management. By implementing measures such as LED lighting, efficient HVAC systems, and smart building technologies, these institutions demonstrate leadership in sustainability while providing a conducive learning environment for students and faculty.

LED Lighting and 5 Star Rated Appliances

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Water Management

Water conservation is a key activity as water availability affects on the development of the campus as well as on all area of development such as farming, industries, etc. Keeping this view water conservation activity is carried out.

Sources of Water

- Rainwater Harvesting
- Bore water
- A Main source of water is RMC connection and Ground water is extracted to fulfill the requirement. The University stores the water in overhead tank.

Sewage Disposal Facility

Atmiya University is situated in the municipal area of Rajkot. RMC (Rajkot Municipal Corporation) provides municipal facilities to the university. Sewage is being disposed in the sewerage network of Rajkot city.

RO Plant

RO plants provide clean and safe drinking water by removing contaminants, such as bacteria, viruses, and dissolved solids, from the water. This ensures that students, faculty, and staff have access to safe drinking water, promoting better health and well-being. With access to clean drinking water on campus, there is less reliance on bottled water. This can lead to a significant reduction in plastic waste generated by the university, contributing to environmental sustainability efforts.

Reverse Osmosis Plant for Drinking Water

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Rainwater Harvesting

Capacity : 12 Lac Liters

Environmental Benefits: By reducing the demand for potable water and minimizing stormwater runoff, rainwater harvesting contributes to environmental conservation efforts. It helps preserve freshwater resources, protects aquatic ecosystems, and mitigates the impacts of urbanization on natural hydrological cycles.

Water Conservation: Rainwater harvesting reduces reliance on traditional water sources by collecting and storing rainwater for various uses, such as irrigation, flushing toilets, and landscape maintenance. This helps conserve freshwater resources and reduces the strain on municipal water supplies, especially during periods of drought or water scarcity.

Rainwater Harvesting Tank

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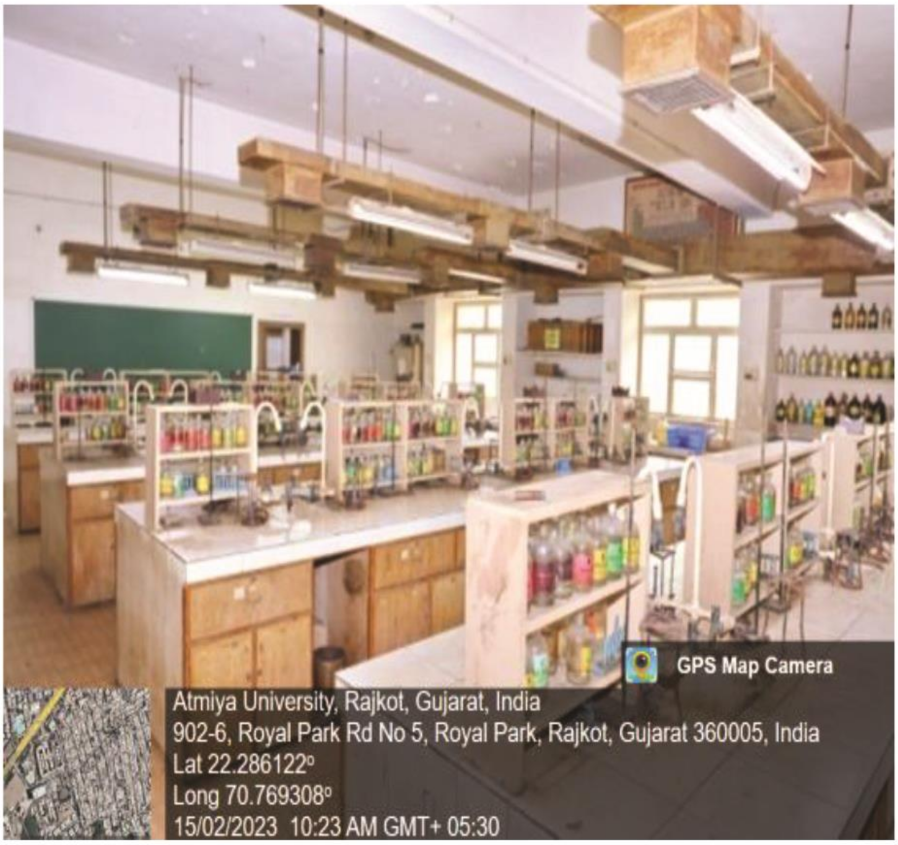
Air Pollution Control Measures

Acidic Fume Suction Panel

Laboratory of chemistry department is equipped with the vapour suction panel mounted on the platform. It collects the hazardous gas and channelizes it to the wet scrubber for the neutralizing before discharge into the atmosphere.



Acidic Fume Suction Panel

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Fume Hood at Chemistry laboratory

Fume hoods are designed to contain and exhaust potentially hazardous fumes, vapors, and gases generated during chemical experiments. They create a barrier between the experiment and the laboratory environment, preventing exposure to toxic or harmful substances. Fume hoods protect laboratory personnel from inhaling harmful chemicals or being exposed to hazardous substances.

Fumehood at Chemistry Laboratory

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Wet Scrubber

1. **Reduction of Air Pollution:** Scrubbers help remove harmful gases, such as hydrogen chloride (HCl) and hydrogen fluoride (HF), from the laboratory air. By capturing these pollutants before they are released into the atmosphere, scrubbers contribute to reducing air pollution and improving indoor and outdoor air quality.

2. **Prevention of Acid Rain Formation:** Hydrogen chloride and hydrogen fluoride emissions can contribute to the formation of acid rain when released into the atmosphere. Alkali gas scrubbers mitigate this environmental impact by removing these acidic gases from laboratory emissions before they can react with moisture in the air and contribute to acid rain formation.

3. **Protection of Ecosystems:** Acid rain resulting from air pollution can have detrimental effects on ecosystems, including damage to vegetation, soil, aquatic habitats, and wildlife. By reducing the emission of acidic gases, alkali gas scrubbers help protect sensitive ecosystems and promote biodiversity conservation.

4. **Minimization of Health Risks:** Hydrogen chloride and hydrogen fluoride are corrosive and toxic gases that can pose health risks to laboratory personnel and surrounding communities if released into the environment. Alkali gas scrubbers help minimize these risks by capturing and neutralizing these hazardous pollutants before they can be emitted.

5. **Reduction of Odors:** In addition to removing acidic gases, alkali gas scrubbers can also help eliminate unpleasant odors associated with certain chemical processes in the laboratory. This improvement in air quality enhances the comfort and well-being of laboratory personnel and visitors.

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6. **Conservation of Resources:** Alkali gas scrubbers typically utilize alkaline solutions, such as sodium hydroxide (NaOH), to neutralize acidic gases. While the operation of scrubbers requires resources such as water and chemicals, their use contributes to the conservation of environmental resources by preventing the release of pollutants into the air and minimizing the need for remediation measures.

Wet Gas Scrubber

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Tree Plantation

Greenery at Atmiya University Campus

University campus is full of indigenous tree and medicinal plants produce positive impact on environment.

- Air Quality Improvement: Trees and plants act as natural air filters, absorbing carbon dioxide (CO2) and other pollutants from the air while releasing oxygen through the process of photosynthesis. This helps improve air quality on campus, reducing the concentration of harmful gases and particulate matter and promoting a healthier environment for students, faculty, and staff.

- Carbon Sequestration: Trees play a crucial role in mitigating climate change by sequestering carbon from the atmosphere and storing it in their biomass. By planting trees on campus, universities can contribute to carbon sequestration efforts and help offset their carbon footprint, supporting broader sustainability goals and initiatives.

- Temperature Regulation: Trees provide natural shade and evapotranspiration, helping to cool the surrounding environment and reduce the urban heat island effect. By creating shaded areas and lowering ambient temperatures, trees contribute to energy conservation efforts by reducing the need for air conditioning and mitigating heat-related stress during hot weather.

- Storm water Management: The roots of trees and plants help absorb rainwater and reduce runoff, preventing soil erosion and minimizing the risk of flooding and water pollution. By incorporating green infrastructure such as rain gardens and bio swales, university campuses can effectively manage storm water runoff, improve water quality, and enhance overall watershed health.

- Biodiversity Conservation: Trees and plants provide habitat and food sources for various species of birds, insects, and other wildlife, contributing to biodiversity conservation on campus. By creating green corridors and natural habitats, universities support local ecosystems and promote ecological resilience in urban environments.

- Noise Reduction: Trees and vegetation help absorb and deflect sound waves, acting as natural buffers against noise pollution from nearby roads, buildings, and other sources. By planting trees strategically around campus buildings and outdoor spaces, universities can create quieter and more tranquil environments conducive to learning, research, and relaxation.

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8) Audit Methodology

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the document, interviewing responsible persons and data analysis, measurements and recommendations. The methodology adopted for this audit was a three-step process comprising of:

1. Data Collection – In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements.

Following steps were taken for data collection:

- Site Visit
- Data about the general information was collected by observation and interview.
- The power consumption of appliances was recorded by taking an average value in some cases.

2. Data Analysis - Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus, Water consumption, Waste Generation and Greenery Management.

3. Recommendation – On the basis of results of data analysis and observations, some steps for reducing power and water consumption were recommended. Proper treatments for waste were also suggested. Use of fossil fuels has to be reduced for the sake of community health.

The above target areas particular to the University was evaluated through questionnaire circulated among the students for data collection.

The following data collected for the following areas during the assessment.

1. Environment & Waste Management
2. Energy Management
3. Water Management

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9) Monitoring, Observations& Recommendations

Ambient Air Quality Monitoring

Date: 15/02/2023

Location	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)
AU Building Main Entrance	49	31.4	16.1	26.3
B/H Ashwad canteen	43.3	29.2	12.3	19.7
Nr. Bus parking	51.5	36.2	14.6	27.1
Nr. Haridarshanam Temple	57.7	31.3	15.7	26.4

Noise Monitoring

Date: 15/02/2023

Location	Observed Value (db (A))	Permissible Day Time Limit (db (A))
AU Building Main Entrance	47	50
B/H Ashwad canteen	46	
Nr. Bus parking	48	
Nr. Haridarshanam Temple	45	

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water from VIP parking Area
Sample collection Date	15/02/2023
Sample analysis date	15/02/2023
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.8	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	234	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	9.32	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	25.2	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 7 colonies)
MacConkey Plates	TLTC (< 3 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Atmiya University Rajkot

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Yogidham Gurukul, Kalawad Road, Rajkot – 360 005
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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water from Yogidham Gate 3
Sample collection Date	15/02/2023
Sample analysis date	15/02/2023
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.9	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	222	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	11.68	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	18.2	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water Near Boy's Hostel
Sample collection Date	15/02/2023
Sample analysis date	15/02/2023
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.78	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	322	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	22.5	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	88.2	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TMTC (> 100 colonies)
MacConkey Plates	TMTC (> 100 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water near Temple
Sample collection Date	15/02/2023
Sample analysis date	15/02/2023
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.68	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	318.8	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	8.02	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	80.2	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	TLTC (< 4 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- AU Main Building
Sample collection Date	15/02/2023
Sample analysis date	15/02/2023
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.6	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	118.8	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	9.78	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	38.9	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- Science Building
Sample collection Date	15/02/2023
Sample analysis date	15/02/2023
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.80	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	130.1	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	7.7	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	8.1	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

*TLTC-Too Less To Count

* TMTC-Too Much To Count

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Observations & Suggestions:

- The University has modern infrastructure, including smart classrooms, a computer lab, and a library, which may indirectly impact the environment through energy consumption and waste generation.
- The presence of a functional borewell suggests potential for implementing rainwater harvesting systems to further conserve water resources.
- The University's adoption of rooftop solar power reflects a proactive approach towards utilizing renewable energy sources.
- University has actively participated in the Government/University programmes like Van Mahotsava, Environment day celebration, Gurupurnima day celebration etc..
- The well-designed University building maximizes natural light, promoting energy efficiency and a positive learning environment.
- Expand the display of informative posters and slogans promoting the benefits of a green and clean campus.
- Conduct drive to promote energy conservation, potentially including a designated "power saving day" each quarter.

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10) Certificate

V.V.P. ENGINEERING COLLEGE

ENVIRONMENTAL AUDIT CELL, Vajdi - Virda, Kalawad Road, Rajkot

Environmental Audit Certificate

Atmiya University, Rajkot-360005-Gujarat-India
For the AY (2022-23)

Environmental Audit for the period **June 2022 to May 2023** has been conducted for the **Atmiya University, Rajkot** to assess the green initiatives planning and efforts implemented in the college campus like Green Campus Management. This Environmental Audit is also aimed to assess eco-friendly initiatives of the Institute towards sustainability.
It is believed that the institution has presented authentic data on various aspects of working of the institute before the audit team. The recommendations are based on the data presented before the team as they existed at the audit time. This certificate is valid for the audit period only. However, it is subject to automatic cancellation in case of any change in prevailing green practice or misleading data. The findings reported in this audit report are entirely based on data furnished by the institute and data collected by the audit team during the audit. Thus, the findings reported in this audit report are strictly limited to the period when the audit was conducted.
The Environmental Quality in the campus is found **adequate and efficacious.**

Dr. Sushil Korgaokar *(Recognised Schedule-I Environmental Auditor, Gujarat Pollution Control Board- GPCB – Gandhinagar, Gujarat)* Environmental Audit Laboratory, V.V.P. Engineering College, Virda – Vajdi, Kalawad Road, Opp. Motel the Village, Rajkot-360005-Gujarat-India	V. V. P. Engineering College, Environmental Audit Cell, Rajkot : 360 005

I assure that the data presented is authentic to the best of my knowledge & I agree to comply with the recommendations received this report within a year at maximum after the internal review.

Dr. Ashish M. Kothari, Dy. Registrar, Atmiya University, Rajkot-360005-Gujarat-India	Deputy Registrar Atmiya University Rajkot Atmiya University ★ Rajkot ★

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V.V.P. ENGINEERING COLLEGE

ENVIRONMENTAL AUDIT CELL, Vajdi - Virda, Kalawad Road, Rajkot

Environmental Audit Certificate

Atmiya University, Rajkot-360005-Gujarat-India

For the AY (2022-23)

Environmental Audit for the period **June 2022 to May 2023** has been conducted for the **Atmiya University, Rajkot** to assess the green initiatives planning and efforts implemented in the college campus like Green Campus Management. This Environmental Audit is also aimed to assess eco-friendly initiatives of the Institute towards sustainability.

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I assure that the data presented is authentic to the best of my knowledge & I agree to comply with the recommendations received this report within a year at maximum after the internal review.

Dr. Ashish M. Kothari, Dy. Registrar, Atmiya University, Rajkot-360005-Gujarat-India	Deputy Registrar Atmiya University Rajkot Atmiya University Rajkot

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1.7 GREEN/ ENVIRONMENT AUDIT 2023-24

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CONTENT

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Environmental Audit Report - Atmiya University, Rajkot
(June 2023 to May 2024)

1) EXECUTIVE SUMMARY

Atmiya University established on April 13, 2018, under the Gujarat Private University Act 11, 2018, ATMIYA University emphasizes to train young minds in consonance with the doctrines of higher education and human values. The aim of this University is to spread eternal happiness and to create a happy society in letter and spirit. The motto "सुहृदंसर्वभूतानम्" (Suhardam Sarva Bhootanam) is an expression of willingness to attain harmony with each creation of the Almighty!

This environmental audit report provides a comprehensive overview of Atmiya University, located in the vibrant city of Rajkot, Gujarat. Atmiya University, a prominent educational institution in the region, serves as a dynamic center for higher education, offering a diverse range of undergraduate, postgraduate, and doctoral programs. Established with a vision 'To nurture creative thinkers and leaders through transformative learning' and committed to create a transformative learning experience by imbibing domain specific knowledge & wisdom and to focus on research based teaching learning with Industry relevant application knowledge. The university plays a crucial role in shaping the region's educational landscape.

Situated in an urban setting, Atmiya University benefits from excellent connectivity and accessibility within the Rajkot area. The campus spans approximately 23.5 acre and features modern infrastructure that includes state-of-the-art classrooms, research labs, libraries, recreational facilities, and green spaces that enhance the learning environment.

The university accommodates a diverse and vibrant community from various parts of India and beyond. This thriving student body is supported by a faculty dedicated to promoting sustainable practices on campus, aligning with Atmiya University's mission to minimize its environmental impact.

A satellite image of the campus highlights its strategic layout and showcases the integration of natural and built environments, offering a visual perspective on the university's physical footprint within the urban landscape. This audit aims to evaluate Atmiya University's environmental practices and suggest actionable steps to enhance sustainability, further aligning with global standards in environmental responsibility and conservation.

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2) ACKNOWLEDGMENT

On behalf of the Environmental Audit & Consultancy Cell at **Shree M. & N. Virani Science College**, we would like to express our sincere gratitude to the management of **Atmiya University, Rajkot** for entrusting us with the important task of conducting their Environmental Audit/Green Audit.

We deeply appreciate the cooperation extended by your team throughout the assessment process. This cooperation was instrumental in the successful completion of the audit.

We would also like to extend our special thanks to **Dr. Ashish Kothari. Deputy Registrar, Atmiya University** for their unwavering support. Their dedication proved to be invaluable in ensuring the project's completion. Finally, we thank all other staff members who actively participated in data collection and field measurements. Their contributions were essential to the smooth execution of the audit.

We are also thankful to:

SN	Name	Designation
1	Er. Ravi S. Tank	Chemical Engineer
2	Er. Jagniyant Lunagariya	Civil Engineer
3	Dr. Mahesh Savant	Chemist
4	Dr. Abhijeet Joshi	Microbiologist
5	Er. Hemil Chavda	Chemical Engieer

In closing, we would like to express our gratitude to **Dr. Shiv Tripathi, Vice Chancellor, Atmiya University** for extending the opportunity to evaluate their esteemed campus's environmental performance.

Registrar
Atmiya University
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Atmiya University Rajkot

3) DISCLAIMER

This Green Audit report has been prepared by the Environmental Audit Cell at **Shree M. & N. Virani Science College for of Atmiya University, Rajkot**. It incorporates data submitted by University officials/representatives along with expert analysis by the EA&CC Audit team.

While all reasonable efforts have been made to ensure its accuracy, the report is based on information gathered in good faith. Conclusions are based on best estimates and do not constitute any express or implied warranty or undertaking. The EA&CC at Atmiya University, Rajkot assumes no responsibility for any direct or consequential loss arising from the use of the information, statements, or forecasts in this report.

The findings presented in this report are based entirely on data provided by Atmiya University and gathered by the audit team during their audit & monitoring visit. It assumes normal operating conditions within the institution throughout the audit period. The auditors are unable to comment on environmental audit parameters outside the scope of the on-site surveys. Consequently, the report's findings are strictly limited to the timeframe during which the audit team conducted its assessment.

The Environment Audit Cell at **Shree M. & N. Virani Science College**, maintains strict confidentiality regarding all information pertaining to Atmiya University. No such information will be disclosed to any third party except public domain knowledge or when required by law or relevant accreditation bodies.

This certificate is valid solely for the current Environmental Audit/Green Audit report. It may be automatically revoked if any significant changes occur in the quantity or quality of waste generation at the aforementioned institute.

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4) INTRODUCTION

Since the 2019-20 academic year, the National Assessment and Accreditation Council (NAAC) requires all Higher Educational Institutions (HEIs) to submit an annual Environmental Audit/Green Audit report. This requirement falls under Criterion 7 of the NAAC accreditation process, which evaluates institutions for their environmental sustainability practices. NAAC, an autonomous body in India, assigns accreditation grades (A, B, or C) based on various criteria, including environmental stewardship.

Furthermore, conducting Environmental Audit/Green Audits aligns with the Corporate Social Responsibility (CSR) initiatives of HEIs. By implementing measures to reduce their carbon footprint, institutions contribute positively to mitigating global warming.

In response to the NAAC mandate, the University management opted for an external Environmental Audit/Green Audit conducted by a qualified professional auditor.

Environmental Audit/Green Audit entails a comprehensive environmental assessment, examining both on-campus and off-campus practices that directly or indirectly impact the environment. In essence, it is a systematic process of identifying, quantifying, recording, reporting, and analysing environmental aspects within the institute setting.

Environmental Audit/Green Audits originated as a tool to evaluate institutional activities that might pose risks to human health and the environment. It provides valuable insights for improvement, guiding institutions towards environmentally responsible practices and infrastructure.

The specific areas covered by this audit include Green Campus initiatives, Waste Management, Water Management, Air Pollution Control, Energy Management, and Carbon Footprint reduction strategies employed by the University.

The following sections delve deeper into the concept, structure, objectives, methodology, analytical tools, and overall goals of this Green Audit.

Educational institutions are increasingly prioritizing environmental concerns. As a result, innovative concepts are emerging to make campuses more sustainable and eco-friendly. Numerous institutions are adopting various approaches to address environmental challenges within their facilities, such as promoting energy conservation, waste recycling, water use reduction, and rainwater harvesting.

The activities of educational institutions can have both positive and negative environmental impacts. A Green Audit is a formal evaluation process that assesses the University's environmental footprint. It provides a comprehensive picture of the current environmental conditions on campus.

Green Audits are a valuable tool for Universities to identify areas of high energy, water, or resource consumption. This allows institutions to implement targeted changes and achieve cost savings. Additionally, Green Audits can analyse the nature and volume of waste generated, leading to improved recycling programs or waste minimization plans.

Green auditing and the implementation of mitigation measures offer a win-win scenario for institutions, students, and the environment. It can foster health and environmental awareness, promoting values and beliefs that benefit everyone. Green Audits also provide an opportunity for staff and students to gain a deeper understanding of the impact their institution has on the environment.

Furthermore, Green Audits can translate into financial savings by encouraging a reduction in resource usage. This process also empowers students and teachers to develop a sense of ownership for personal and social environmental responsibility.

The Green Audit process typically involves collecting primary data, conducting a site visit with University representatives, and reviewing relevant policies, activities, documents, and records.

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Environmental Audit Report - Atmiya University, Rajkot
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OBJECTIVE AND SCOPE

The broad aims/benefits of the Environmental Audit/Green Audit would be

- Environmental education through systematic environmental management approach
- Improving environmental standards
- Benchmarking for environmental protection initiatives
- Sustainable use of natural resource in the campus.
- Financial savings through a reduction in resource use
- Curriculum enrichment through practical experience
- Development of ownership, personal and social responsibility for the University campus and its environment
- Enhancement of University profile
- Developing an environmental ethic and value systems in young people

Outcomes OF ENVIRONMENT AUDIT TO EDUCATIONAL INSTITUTIONS

There are many advantages of environment audit to an Educational Institute:

1. Protect the environment in and around the campus.
2. Recognize the cost saving methods through waste minimization and energy conservation.
3. Empower the organization to frame a better environmental performance.
4. Portrays good image of institution through its clean and green campus.

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5) ENVIRONMENTAL POLICY

ATMIYA UNIVERSITY

(Established under the Gujarat Private University Act 11, 2018)

Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

Environment and Sustainability Policy for Green Campus

Atmiya University recognizes the critical importance of environmental sustainability and its role in minimizing ecological footprints. Guided by its commitment to the principles of conservation and harmony with nature, the university adopts this Policy to integrate environmental awareness and sustainable practices into its daily academic and administrative operations, education, and community engagement. This policy reflects the university's dedication to fostering a sustainable future.

Objective

Atmiya University strives to establish a clean, green, and sustainable campus by:

- Developing, monitoring, and evaluating a policy to guide green campus initiatives.
- Reducing the ecological footprint through sustainable practices.
- Educating students and staff on environmental issues and on building harmony with nature & mother earth to create a healthier, sustainable future.
- Promoting innovative environmental practices to enhance sustainability performance.
- Strengthening an environmentally responsible culture across curricular and extracurricular activities.
- Addressing local and regional environmental challenges with sustainable solutions.
- Ensuring sustainable resource use and minimizing wasteful practices.
- Protecting biodiversity and reducing environmental pollution.

Environmental Goals and Targets

The university sets specific goals such as reducing energy consumption, minimizing waste generation, conserving water, managing/recycling/disposal of waste, and promoting biodiversity to enhance its sustainability initiatives.

Key Focus Areas

1. **Clean Campus Initiatives**: Regular cleaning drives, waste segregation, and beautification projects.

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2. **Green Energy**: Installing renewable energy sources to reduce dependency on non-renewable energy sources.
3. **Landscaping and Biodiversity**: Developing green spaces, planting neem trees, and conserving biodiversity.
4. **Energy Efficiency**: Installing energy-efficient appliances, natural lighting, and ventilation.
5. **Water Conservation**: Using rainwater harvesting systems, low-flow fixtures, and RO wastewater recycling.
6. **Waste Management**: Segregating solid, liquid, e-waste, and bio-waste for recycling and composting.
7. **Transportation and Mobility**: Promoting biking, carpooling, e-vehicles, and public transit.
8. **Green Building Standards**: Incorporating eco-friendly designs in construction and renovation projects.
9. **Curriculum Integration**: Courses on SDG awareness and environmental science across all disciplines.
10. **Community Engagement**: Conducting workshops, seminars, and outreach programs on environmental topics.

Key Practices

1. Energy Efficiency

- Transition to energy-efficient devices and systems.
- Encourage behaviour changes for energy conservation.
- Promote renewable energy solutions like solar and biogas.

2. Waste Management and Recycling

- Comprehensive waste management with dedicated recycling and composting units.
- Initiatives like **Parivartan (Paper Recycling Unit)** and **Sarjan (Agricultural Waste Recycling Unit)** to create sustainable products.

3. Water Conservation

- Installation of rainwater harvesting systems and reservoirs with a 17 lakh-litre capacity.
- Xeriscaping and responsible water usage to reduce dependency on municipal water.

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Environmental Audit Report - Atmiya University, Rajkot
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ATMIYA UNIVERSITY
(Established under the Gujarat Private University Act 11, 2018)
Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

4. Biodiversity and Green Spaces

- Develop gardens, tree plantations, and outdoor educational spaces to promote biodiversity.
- Integrate sustainable farming practices using Panchgavya and Jivamrut fertilizers.

5. Transportation and Mobility

- Establish e-vehicle charging stations, bike racks, and pedestrian-friendly paths.

6. Education and Awareness

- Organize campaigns like **Use Solar-Save Nature**, **Save Energy-Water** and tree plantation drives.
- Include sustainability topics in the curriculum to foster awareness and innovation.

Implementation and Monitoring

- **Incentives and Recognition**: Reward active participants in sustainability efforts.
- **Budget and Funding**: Allocate resources for projects and seek grants for sustainability initiatives.
- **Compliance and Legal Adherence**: Ensure alignment with relevant environmental laws and regulations.
- **Periodic Review**: Monitor the policy's impact and revise based on feedback and emerging challenges.

Conclusion

Adopting this Policy highlights Atmiya University's unwavering commitment to environmental stewardship and sustainable development. By fostering a culture of awareness and proactive participation, the university aspires to create a greener and healthier campus, setting a benchmark for future generations. Together, we will build a resilient and sustainable future.

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6) **GENERAL INFORMATION**

a. Does any Green Audit conducted earlier? **Yes**

b. Total Area of the University = 84455 m^2

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

AY	Students			Teaching Staff			Non-Teaching Staff			Total		
	M	F	Trans	M	F	Trans	M	F	Trans	M	F	Trans
2023-24	3964	2315	0	184	154	0	208	37	0	4356	2506	0

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

Month (AY- 2023-2024)	No. of Working Days
June	21
July	24
August	25
September	17
October	22
November	26
December	24
January	25
February	24
March	23
April	24
May	26
Total	**281**

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

Municipal dump yard	**No**
Garbage heap	**No**
Public convenience	**Yes**
Sewer line	**Yes**
Stagnant water	**No**
Industry	**No**
Bus / Railway station	**Yes**
Market / Shopping complex	**Yes**
Play Ground	**Yes**

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

Type of waste		Response	Detail(s) of Waste Generated	Quantity of Waste Generated (kg)
Solid	Biodegradable	Yes	Gardening, Cow dung	175
	Non-biodegradable	Yes	Sweeping waste,	10
	e-waste	Yes	Computer, Battery	00
Liquid		Yes	Kitchen Waste	35
Gas		No	--	--

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

- Composting: Gardening and cow dung waste used to make compost.
- Non-recyclable and non biodegradable waste disposal is managed by the Rajkot Municipal Corporation.

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h. Do you use recycled paper in institute? Yes

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

Poster competition activities	**Yes**
Campaigns	**Yes**
Webinars and seminars	**Yes**

j. Is there a garden in your institute?

Garden	**Yes**	**Area = 6732.26m^2**

k. Total number of Plants in Campus?

SN	Namepd Species	Numbers
1	Neem Tree	211
2	Lemon cypress	1
3	FicusMicrocapra	100
4	Hedge Plant	01
5	Tajplantshub dracaena	01
6	Crown of Throns	01
7	Spanish Moss (TilandsiaUsneoides)	10
8	Ruellia simplex	51
9	FagusSylvatica plant	01
10	Euphorbia Tithymaloides	11
11	Weeping Fig	685
12	LysilomaWatsonil	01

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13	Royal Palm	38
14	Bamboo	230
15	Moringa	01
16	Acalyphawilkesiana	300
17	Dracaena Angustifolia	11
18	*Polysciasscutellaria*	04
19	Cordylinefruticosa	40
20	Dracaena Reflexa	500
21	Garden Croton	01
22	polysciasguilfoylei	10
23	Oyster Plant (tradescantiazebrina)	300
24	Lonicerapileata	50
25	Saribusrotundifolius	10
26	Ixora	10
27	Hyophorbelagenicaulis	20
28	Purple heart	150
29	Yellow cosmos (sulphur cosmos)	100
30	Canna discolor	15
31	Durantaerecta	1100
32	Pritchardiapacifica	11
33	Capparissandwichiana	50
34	Nerium Oleander	10
35	Casuarinaequisetifolia	20

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36	Caryotaurens	2
37	Areca palm	20
38	Ravenala	10
39	Iresineherbstii	300
40	Sago Plam	22
41	Sphgniticolatrilobata	1500
42	Thuja	24
43	Dracaena trifasciata	62
44	Ponytail Palm	2
45	Asparagus densiflorus	50
46	Alocasiazebrina	02
47	Bismarck palm	8
49	Lotus	100
50	Catharanthus	50
51	Padavati Jasmin	50
52	Caryotamitis	04
53	Monoonlongifolium	3
54	Breyniadisticha	50
55	PlumeriaObtusa	10
56	Alovera	100
57	Century Plant	30
58	Sweet osmanthus	1
59	Crinum asiaticum	27

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60	Diantherapectoralis	200
61	Hibiscus	10
62	Ficusaspera	5
63	Mulberry tree	10
64	Barbary fig	5
65	Dracaena angolensis	2
66	Terminaliachebula plant	2
67	Nettlespurges	2
68	Yellow elder	2
69	MadhucaLongifolia	2
70	Eucalyptus globulus.	1
71	Melicoccusbijugatus	1
72	Casuarinaequisetifolia	1
73	Indian jujube	5
74	Tulsi	50
75	Coconut palm tree	8
76	Calotropisgigantea	1
77	Persian Silk	5
78	Mango tree	1
79	Curry Tree	4
80	Punicagranatum	5
81	Pandanusveitchii	50
82	Streblusasper	5

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l. List uses of water in your institute

Basic use of water in campus	KL/Day
Drinking	15
Gardening	17
Kitchen and Toilets	20
Others	15
Hostel	29
Total	**96 KL/Day**

m. Electricity Consumed

Month (Academic Year 2023-2024)	Electricity Consumed (kWh)
June	1,88,249
July	1,89,466
August	2,10,645
September	1,68,646
October	1,74,560
November	1,70,390
December	1,30,250
January	1,33,775
February	1,44,080
March	1,69,550
April	2,02,600
May	2,26,740
Total	**21,08,951**

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

Building	SN	Tank Description	Size (litre)	No. of Tank	Capacity (litre)
AU Building	1	Raw Water- A Wing	2500	4	10000
	2	Raw Water- B Wing	2500	4	10000
	3	Master RO - Raw Water	5000	3	15000
	4	RO Water Tank	2500	7	17500
	5	Pharmacy and Mechanical Lab	2000	1	2000
	6	Faculty Block (A& B Wing)	2500	2	5000
	7	Library Terrace	2000	1	2000
	8	Raw Water Near AU Building- Underground	275000	1	275000
MPAB	9	RO Water - at Terrace	2000	2	4000
	10	Raw Water- at Terrace	60000	1	60000
	11	Raw Water- at Terrace	40000	7	280000
	12	Near Building- Undrground	333746	2	667492
	13	Near Building- Undrground	336826	2	673652
	14	Below Temple- Underground	189924	1	189924
	15	Below Temple- Underground	43718	1	43718
	16	In Front of Store- Underground	123604	1	123604

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Workshop	17	RO Water- at Terrace	2000	1	2000
	18	Raw Water- at Terrace	2000	2	4000
	19	Raw Warer- at Terrace	5000	1	5000
	20	Behind Workshop- Round Tank- Underground	45650	1	45650
Science Building	21	RO Water- at Terrace	2500	1	2500
	22	Raw Water Tank- at Terrace	23300	2	46600
	23	Raw Water Tank- Ladies Toilet	30000	3	90000
	24	CIF Lab	1500	1	1500
	25	Raw Water- OTIS-Underground	32620	1	32620
	26	Wastewater- Outside the Building	2000	1	2000
Yogidham Gate	27	Raw Water Tank-Underground	48750	4	195000
Niramay	28	RO Water Tanki at Terrace	2500	1	2500
	29	Raw Water Tank- at Terrace	11650	1	11650
	30	Raw Water Tank- Near Office	5000	2	10000
Sarvanaman	31	Raw Water Tank- at Terrace	2000	1	2000
	32	Raw Water Tank- at Terrace	8550	1	8550
	33	Raw Water- inside building	600	1	600
Total Water Storage Capacity					**28,41,060**

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7) GREEN INITIATIVES BY THE INSTITUTE

Green Architecture

The incorporation of green architecture principles in academic institutions not only reduces environmental impact but also fosters a healthier and more inspiring learning environment for students and faculty alike. By integrating features such as passive solar design, natural ventilation, and green roofs, these institutions showcase a commitment to sustainability while promoting innovation and awareness of eco-friendly design practices within the academic community.

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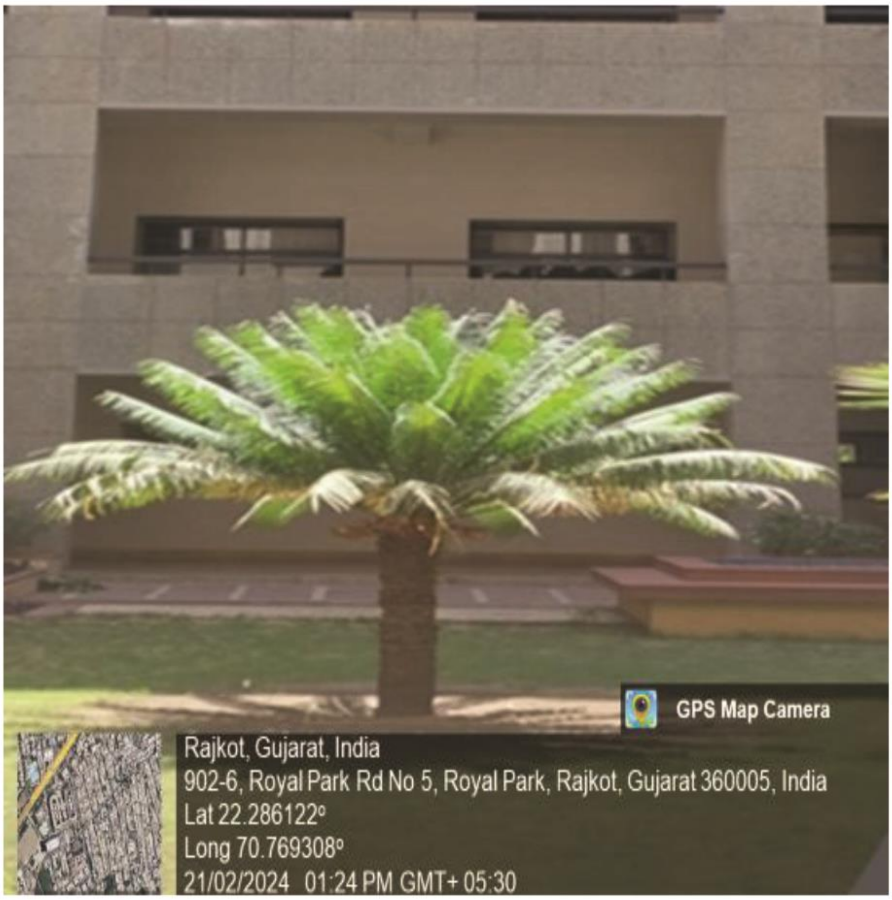

Natural Light and Ventilation in Academic Building

Impact:

- Low artificial lighting requirements
- Energy consumption optimization
- Low green house gas emission
- Low level of strain to Eyes

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Campus Biodiversity

A thriving campus biodiversity in academic institutions is not merely a reflection of ecological health but also serves as a testament to the institution's commitment to sustainability and environmental stewardship. It provides a living laboratory for students to engage with nature firsthand, fostering a deeper understanding of ecological systems and instilling a sense of responsibility towards conservation. Beyond its educational value, a biodiverse campus offers numerous benefits such as improved air and water quality, enhanced aesthetics, and increased resilience to environmental stressors. It becomes a sanctuary for wildlife, contributing to the preservation of local ecosystems and biodiversity at large. Atmiya University campus is a rich in the biodiversity with the full of greenery and in house terrace garden.

Glimpse of Flora at University Campus

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Terrace Farming Capacity (Niramaya)

Installation Detail

- Total Area: 800 Square meter
- Three different farming: Hydroponics , Vertical and Terrace

Hydroponic farming

- method of growing plants without soil, using a nutrient-rich water solution to deliver essential nutrients directly to the plants' roots
- Tomato, Basil and mint grown by using this method.

Vertical farming

- vertical farming utilizes vertical space
- growing crops in vertically stacked layers
- Vertical farming reduces the need for extensive land use.

Terrace garden

- The following are grown in the terrace garden
- Grapes, Calabash and asparagus bean are grown using this method.

Impact of terrace farming

- Controlled environments can reduce the need for pesticides, as pests and diseases are less likely to affect crops grown indoors
- Terrace gardens act as natural insulators, reducing the need for artificial heating and cooling within the building. This can lead to energy savings and lower electricity bills.
- Students get the practical knowledge of terrace farming in the urban environment that can be replicated and implemented at their home and society.

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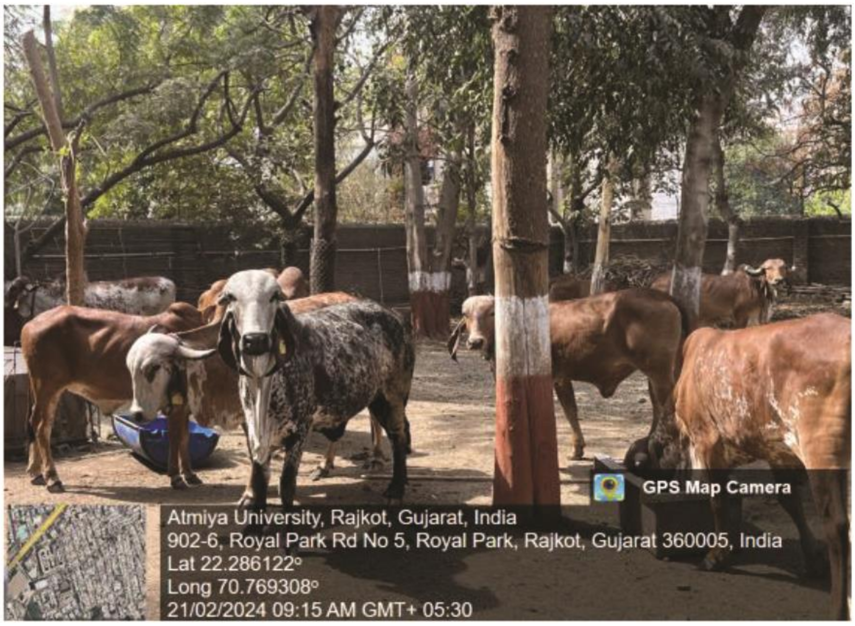
Terrace Garden (Niramay) at University Campus

Gaushala at Campus

- 24 Indian Breed Cow
- 01 Bull
- State of the art facilities
- Value addition cow urine for herbal and fertilizer utilization
- Decorative products are being made from the cow dung.
- Jivamrut fertilizer being used in the campus is a product of gaushala.
- It contibutes to maintain the organic carbon content in the campus soil as it provides the raw material for the compost.



SatyakamGaushala

It provides students with firsthand experience in animal care, veterinary science, and sustainable agriculture. They can learn about the importance of cows in Indian culture, their significance in agriculture, and sustainable farming practices.

Gaushalas contributes to the eco-friendly practices like composting cow dung for fertilizer, using biogas for cooking which can serve as models for sustainable living and agriculture.

In Indian cultures, cows are revered as sacred animals. Having a gaushala on campus can help preserve and promote this cultural heritage among students and the community.

Universities can conduct research on various aspects of cow rearing, including breeding, nutrition, and healthcare. This research can contribute to advancements in animal science and agriculture.

Cows play a crucial role in maintaining soil fertility through their dung, which is rich in nutrients. By managing cow waste effectively, gaushalas can contribute to soil health and environmental conservation.

Solid Waste Management

Natural Fertilizer from Organic Waste

Jivamrut (Natural Fertilizer)

Installation Detail:

- Year: 2008
- Place: at boys parking
- Process: Collect neem leaves form campus and added with cow dung, cow urine and Earthworms

Amrut Soil

- Ingredients for AmrutMitti range from cow dung, cow urine, biomass like dry and decayed leaves, household kitchen waste like vegetable peels.
- AmrutSoil is full of all nutrients needed by plants, is very rich in variety of microbes, has the right pH, has high carbon content, has excellent water holding capacity.
- Mixing Cow dung, cow urine and jaggery
- Immersing dry biomass in AmrutJal kept in drums
- Process take at least 1 month
- Use as garden fertilizer.

Impact:

- Applied in garden as fertilizer
- Improve soil micro-biota of campus soil
- Less usages of chemical fertilizer

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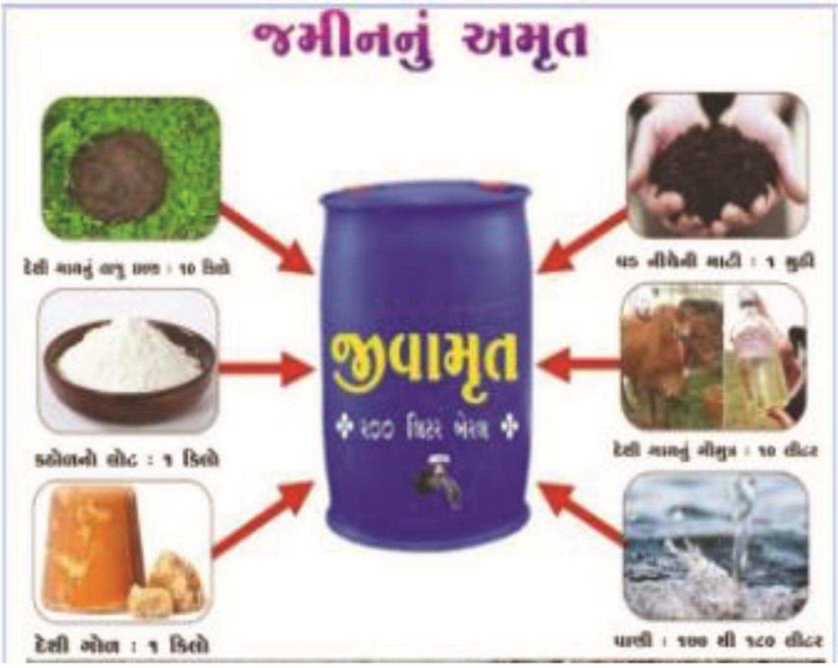

Figure 6: Amrut Soil and Jivamrut Plant

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Municipal Solid Waste Segregation Bin

University campus having more the 100 solid waste collection dustbin design for the proper waste segregation. Waste paper is recycled at the in-house paper recycling facility and converted into the filter paper, envelope and other artistic and decorative products.

Having separate bins encourages people to sort their waste, making it easier to recycle materials such as paper, plastic, glass, and metal. This promotes a culture of recycling and reduces the amount of waste sent to landfills or incinerators.

Recycling materials reduces the need for raw materials, energy, and water required to manufacture new products. This conserves natural resources and reduces the environmental impact associated with extraction, processing, and transportation.

Implementing separate bins provides an opportunity for educational initiatives on waste management, recycling, and environmental stewardship. Students, faculty, and staff can learn about the importance of recycling and how their actions contribute to sustainability.

Separate Dustbin for Recyclable and Non-Recyclable Waste

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Paper Recycling Unit

In embracing the principles of the circular economy, Atmiya university is pioneer in sustainable practices such as paper recycling, ensuring that resources are reused and regenerated rather than disposed of after single use. By implementing robust paper recycling programs, these institutes not only reduce waste and environmental impact but also cultivate a culture of resource efficiency and responsible consumption among students, faculty, and staff.

Recycling paper can lead to cost savings for the university by reducing waste disposal fees and the need to purchase new paper products. This can free up financial resources that can be allocated to other campus initiatives or projects.

Parivartan- Paper Recycling Plant

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Plastic Water Bottle Recycling Plant

University have installed water bottle recycling plant at entrance for all stakeholders having capacity of 20 kg/day

A bottle crusher helps reduce the volume of plastic bottles, thereby decreasing the amount of plastic waste generated on campus. This contributes to waste reduction efforts and helps minimize the environmental impact of plastic pollution.

By providing a convenient way to crush plastic bottles, the crusher encourages recycling behavior among students, faculty, and staff. It reinforces the importance of recycling and helps divert plastic waste from landfills or incinerators.

Plastic pollution poses significant threats to ecosystems, wildlife, and human health. By reducing plastic waste through recycling, a bottle crusher helps protect the environment and minimize the adverse effects of plastic pollution on marine life, terrestrial habitats, and waterways.

Plastic Bottle Crusher Machine

Energy Conservation Measures

Renewable Power Generation

The adoption of solar rooftop systems in Atmiya university significantly reduces carbon emissions, contributing to a cleaner and more sustainable environment while serving as a tangible demonstration of the institute's commitment to renewable energy and climate action. Additionally, the integration of solar rooftops enhances the educational experience by providing real-world examples of sustainable technology, inspiring students to explore and innovate in the field of renewable energy. Atmiya University having fully operational solar rooftop electricity generation capacity as per the vision of the government.

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Rooftop Solar Plant

Renewable Power Generation per Month

Month & Year	RE Cultivation in KWh
Jun-23	50,144
Jul-23	38,736
Aug-23	41,520
Sep-23	25,616
Oct-23	18,080
Nov-23	41,280
Dec-23	42,400
Jan-24	44,640
Feb-24	47,840
Mar-24	62,720
Apr-24	67,040
May-24	67,200
Total	**547,216 KWh**

Energy Efficient Electrical Appliances

Energy-efficient infrastructure in institutions not only lowers operational costs but also serves as a beacon of sustainable practices, showcasing the institution's dedication to environmental stewardship and responsible resource management. By implementing measures such as LED lighting, efficient HVAC systems, and smart building technologies, these institutions demonstrate leadership in sustainability while providing a conducive learning environment for students and faculty.

LED Lighting and 5 Star Rated Appliances

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Electrical Vehicle Charging Station

The installation of electrical charging stations at university campus demonstrates a proactive approach towards supporting sustainable transportation options for students, faculty, and visitors, thereby reducing reliance on fossil fuels and promoting the adoption of electric vehicles. These stations not only facilitate the transition towards cleaner modes of transportation but also serve as educational tools, raising awareness about the benefits of electric vehicles and contributing to a culture of environmental responsibility within the campus community.

IEC 61851-1 Compliance

Electronic Vehicle Charging Station

Water Management

Water conservation is a key activity as water availability affects on the development of the campus as well as on all area of development such as farming, industries, etc. Keeping this view water conservation activity is carried out.

Sources of Water

- Rainwater Harvesting
- Bore water
- A Main source of water is RMC connection and Ground water is extracted to fulfill the requirement. The University stores the water in overhead tank.

Sewage Disposal Facility

Atmiya University is situated in the municipal area of Rajkot. RMC (Rajkot Municipal Corporation) provides municipal facilities to the university. Sewage is being disposed in the sewerage network of Rajkot city.

RO Plant

RO plants provide clean and safe drinking water by removing contaminants, such as bacteria, viruses, and dissolved solids, from the water. This ensures that students, faculty, and staff have access to safe drinking water, promoting better health and well-being. With access to clean drinking water on campus, there is less reliance on bottled water. This can lead to a significant reduction in plastic waste generated by the university, contributing to environmental sustainability efforts.

Reverse Osmosis Plant for Drinking Water

Rainwater Harvesting

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Capacity : 12 Lac Liters

Environmental Benefits: By reducing the demand for potable water and minimizing stormwater runoff, rainwater harvesting contributes to environmental conservation efforts. It helps preserve freshwater resources, protects aquatic ecosystems, and mitigates the impacts of urbanization on natural hydrological cycles.

Water Conservation: Rainwater harvesting reduces reliance on traditional water sources by collecting and storing rainwater for various uses, such as irrigation, flushing toilets, and landscape maintenance. This helps conserve freshwater resources and reduces the strain on municipal water supplies, especially during periods of drought or water scarcity.

Rainwater Harvesting Tank

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Air Pollution Control Measures

Acidic Fume Suction Panel

Laboratory of chemistry department is equipped with the vapour suction panel mounted on the platform. It collects the hazardous gas and channelizes it to the wet scrubber for the neutralizing before discharge into the atmosphere.

Acidic Fume Suction Panel

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Fume Hood at Chemistry laboratory

Fume hoods are designed to contain and exhaust potentially hazardous fumes, vapors, and gases generated during chemical experiments. They create a barrier between the experiment and the laboratory environment, preventing exposure to toxic or harmful substances. Fume hoods protect laboratory personnel from inhaling harmful chemicals or being exposed to hazardous substances.

Fumehood at Chemistry Laboratory

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Wet Scrubber

1. **Reduction of Air Pollution:** Scrubbers help remove harmful gases, such as hydrogen chloride (HCl) and hydrogen fluoride (HF), from the laboratory air. By capturing these pollutants before they are released into the atmosphere, scrubbers contribute to reducing air pollution and improving indoor and outdoor air quality.

2. **Prevention of Acid Rain Formation:** Hydrogen chloride and hydrogen fluoride emissions can contribute to the formation of acid rain when released into the atmosphere. Alkali gas scrubbers mitigate this environmental impact by removing these acidic gases from laboratory emissions before they can react with moisture in the air and contribute to acid rain formation.

3. **Protection of Ecosystems:** Acid rain resulting from air pollution can have detrimental effects on ecosystems, including damage to vegetation, soil, aquatic habitats, and wildlife. By reducing the emission of acidic gases, alkali gas scrubbers help protect sensitive ecosystems and promote biodiversity conservation.

4. **Minimization of Health Risks:** Hydrogen chloride and hydrogen fluoride are corrosive and toxic gases that can pose health risks to laboratory personnel and surrounding communities if released into the environment. Alkali gas scrubbers help minimize these risks by capturing and neutralizing these hazardous pollutants before they can be emitted.

5. **Reduction of Odors:** In addition to removing acidic gases, alkali gas scrubbers can also help eliminate unpleasant odors associated with certain chemical processes in the laboratory. This improvement in air quality enhances the comfort and well-being of laboratory personnel and visitors.

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6. **Conservation of Resources:** Alkali gas scrubbers typically utilize alkaline solutions, such as sodium hydroxide (NaOH), to neutralize acidic gases. While the operation of scrubbers requires resources such as water and chemicals, their use contributes to the conservation of environmental resources by preventing the release of pollutants into the air and minimizing the need for remediation measures.

Wet Gas Scrubber

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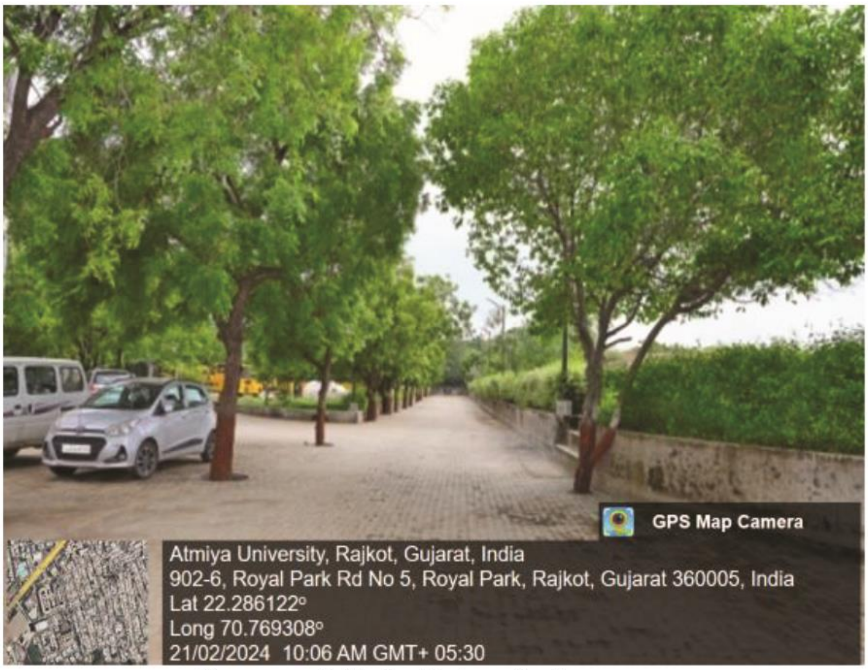
Tree Plantation



Greenery at Atmiya University Campus

University campus is full of indigenous tree and medicinal plants produce positive impact on environment.

- Air Quality Improvement: Trees and plants act as natural air filters, absorbing carbon dioxide (CO2) and other pollutants from the air while releasing oxygen through the process of photosynthesis. This helps improve air quality on campus, reducing the concentration of harmful gases and particulate matter and promoting a healthier environment for students, faculty, and staff.

- Carbon Sequestration: Trees play a crucial role in mitigating climate change by sequestering carbon from the atmosphere and storing it in their biomass. By planting trees on campus, universities can contribute to carbon sequestration efforts and help offset their carbon footprint, supporting broader sustainability goals and initiatives.

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- Temperature Regulation: Trees provide natural shade and evapotranspiration, helping to cool the surrounding environment and reduce the urban heat island effect. By creating shaded areas and lowering ambient temperatures, trees contribute to energy conservation efforts by reducing the need for air conditioning and mitigating heat-related stress during hot weather.

- Storm water Management: The roots of trees and plants help absorb rainwater and reduce runoff, preventing soil erosion and minimizing the risk of flooding and water pollution. By incorporating green infrastructure such as rain gardens and bio swales, university campuses can effectively manage storm water runoff, improve water quality, and enhance overall watershed health.

- Biodiversity Conservation: Trees and plants provide habitat and food sources for various species of birds, insects, and other wildlife, contributing to biodiversity conservation on campus. By creating green corridors and natural habitats, universities support local ecosystems and promote ecological resilience in urban environments.

- Noise Reduction: Trees and vegetation help absorb and deflect sound waves, acting as natural buffers against noise pollution from nearby roads, buildings, and other sources. By planting trees strategically around campus buildings and outdoor spaces, universities can create quieter and more tranquil environments conducive to learning, research, and relaxation.

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8) AUDIT METHODOLOGY

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The criteria, methods and recommendations used in the audit were based on the identified risks. The methodology includes: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the document, interviewing responsible persons and data analysis, measurements and recommendations. The methodology adopted for this audit was a three-step process comprising of:

1. Data Collection – In preliminary data collection phase, exhaustive data collection was performed using different tools such as observation, survey communicating with responsible persons and measurements.

Following steps were taken for data collection:

- Site Visit
- Data about the general information was collected by observation and interview.
- The power consumption of appliances was recorded by taking an average value in some cases.

2. Data Analysis - Detailed analysis of data collected include: calculation of energy consumption, analysis of latest electricity bill of the campus, Water consumption, Waste Generation and Greenery Management.

3. Recommendation – On the basis of results of data analysis and observations, some steps for reducing power and water consumption were recommended. Proper treatments for waste were also suggested. Use of fossil fuels has to be reduced for the sake of community health.

The above target areas particular to the University was evaluated through questionnaire circulated among the students for data collection.

The following data collected for the following areas during the assessment.

1. Environment & Waste Management
2. Energy Management
3. Water Management

9) MONITORING, OBSERVATIONS & RECOMMENDATIONS

Ambient Air Quality Monitoring

Date: 21/02/2024

Location	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)
AU Building Main Entrance	43.7	29.4	17.1	21.3
B/H Ashwad canteen	45.6	26.2	13.3	18.4
Nr. Bus parking	59.4	31.2	15.6	23.2
Nr. Haridarshanam Temple	51.8	36.3	17.4	24.6

Noise Monitoring

Date: 21/02/2024

Location	Observed Value (db (A))	Permissible Day Time Limit (db (A))
AU Building Main Entrance	48	50
B/H Ashwad canteen	45	
Nr. Bus parking	47	
Nr. Haridarshanam Temple	46	

Water Analysis Report

TEST REPORT

Sample Description	Borewell Water from VIP Parking Area
Sample collection Date	21/02/2024
Sample analysis date	21/02/2024 to 25/02/2024
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.9	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	353.925	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	50.42	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	88.2	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 7 colonies)
MacConkey Plates	TLTC (< 3 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water from Yogidham Gate 3
Sample collection Date	21/02/2024
Sample analysis date	21/02/2024 to 21/02/2024
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.8	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	211.2	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	15.92	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	52.0	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Water Analysis Report

TEST REPORT

Sample Description	Borewell Water Near Boy's Hostel
Sample collection Date	21/02/2024
Sample analysis date	21/02/2024 to 21/02/2024
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.84	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	321.2	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	23.5	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	48.2	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TMTC (> 100 colonies)
MacConkey Plates	TMTC (> 100 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Atmiya University Rajkot

Water Analysis Report

TEST REPORT

Sample Description	Borewell Water near Temple
Sample collection Date	21/02/2024
Sample analysis date	21/02/2024 to 25/02/2024
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.92	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	421.2	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	35.23	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	68.2	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	TLTC (< 5 colonies)
MacConkey Plates	TLTC (< 4 colonies)
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

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Environmental Audit Report - Atmiya University, Rajkot
(June 2023 to May 2024)

Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- AU Main Building
Sample collection Date	21/02/2024
Sample analysis date	21/02/2024 to 21/02/2024
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.70	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	121.2	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	19.87	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	38.2	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

Environmental Audit Report - Atmiya University, Rajkot
(June 2023 to May 2024)

Water Analysis Report

TEST REPORT

Sample Description	Drinking Water- Science Building
Sample collection Date	21/02/2024
Sample analysis date	21/02/2024 to 25/02/2024
Quantity of Sample	2.5 liters

Test Result

Sr. No.	Test Parameter	Results	Units	Desirable limit As per IS 10500:2012	Test method
1	**Taste**	Agreeable	-	Agreeable	IS 3025 (Part 7&8)
2	**Odour**	Unobjectionable	-	Unobjectionable	IS 3025 (Part 5) 1983
3	**pH**	7.80	-	6.5 to 8.5	IS 3025 (Part 11)
4	**Total Dissolved Solids (TDS)**	184.2	mg/l	500 max	IS 3025 (Part 16)
5	**Chloride**	17.63	mg/l	250 max	IS 3025 (part 32)
6	**Turbidity**	<1	NTU	1.0 Max	IS 3025 (part 10)
7	**Total Hardness (as $CaCO_3$)**	28.2	Mg/l	200 max	IS 3025 (part 21)

Microbial Analysis

Test	Observation
EMB plates	No Colonies Observed
MacConkey Plates	No Colonies Observed
Single strength MPN broth	No Colour change, No Gas production
Double strength MPN broth	No Colour change, No Gas production

*TLTC-Too Less To Count

* TMTC-Too Much To Count

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Atmiya University Rajkot

OBSERVATIONS:

1. Land Use: The University campus spread over 23.5 Acres of land.
2. Green Initiatives: The University supports efforts to eliminate plastic from campus. Students are advised to avoid using plastic on campus. The University organizes regular cleanliness drive to collect biodegradable and non-biodegradable waste. e-waste are cleaned periodically by recognised & authorised recyclers. Biodegradable waste is self-composting.
3. Fire & Safety: The University building is also safe through state of the art housed Fire safety system.
4. Energy Consumption: While the University has a solar energy generation facility, the overall energy consumption patterns, including electricity, water, and other resources, should be assessed to identify potential environmental impacts and energy efficiency opportunities.
5. Potential for Water Harvesting: The presence of a functional borewell suggests potential for implementing rainwater harvesting systems to further conserve water resources.
6. Community Engagement Potential: The University's environmental efforts be extended to engage the local community in sustainability practices.
7. Beautiful Campus Greenery: The presence of over 5,00+ neem trees on campus creates a pleasant and environmentally friendly atmosphere.
8. Abundant Natural Light: The well-designed University building maximizes natural light, promoting energy efficiency and a positive learning environment.

RECOMMENDATIONS:

1. Install sensor-based faucets in washrooms and urinals to minimize water waste.
2. Develop a dense plantation area using the Miyawaki method to become a role model & leading example for other state & private universities to demonstrate creation of oxygen bank and enhance campus greenery.
3. Conduct drive to promote energy conservation, potentially including a designated "power saving day" each quarter.
4. Establish a regular cleaning and maintenance schedule for the rooftop solar panels to ensure optimal energy production.

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10) **CERTIFICATE**

SWAMI SHREEJI

SARVODAY KELAVANI SAMAJ MANAGED

Shri Manibhai Virani & Smt. Navalben Virani Science College

(An Autonomous College affiliated to Saurashtra University, Rajkot)

NAAC Assessment & Accreditation Cycle - III: 'A++' grade with CGPA 3.65 on 4 point scale

Environmental Audit Certificate
For the Period: June 2023 to May 2024

This certificate confirms that an Environmental/Green Audit was conducted at **Atmiya University, Rajkot,** to assess the implementation of green initiatives and eco-friendly practices, particularly in the area of Green Campus Management.

The audit assessed the authenticity of the data provided by the institution and the effectiveness of its sustainability efforts. The recommendations outlined in the audit report are based on the information available at the time of the audit.

I assure that the data presented is authentic to the best of my knowledge & I agree to comply with the recommendations received this report within a year at maximum after the internal review.

Dr. Divyang D. Vyas, Registrar, Atmiya University, Rajkot-360005-Gujarat-India	Atmiya University Rajkot Registrar Atmiya University Rajkot

The audit concluded that the environmental quality on campus is found **adequate and efficacious** and meets the required standards.

Ravi S. Tank *(Recognised Schedule-I Environmental Auditor, Gujarat Pollution Control Board- GPCB – Gandhinagar, Gujarat)* I/c Director, Environmental Audit & Consultancy Cell, Shri Manibhai Virani & Smt. Navalben Virani Science College, Yogidham Gurukul, Kalawad Road, Rajkot-360005-Gujarat-India	Smt. Navalben Virani Science College EA&CC Shri Manibhai Virani Rajkot I/C Director, Environmental Audit & Consultancy Cell, Shri Manibhai Virani & Smt. Navalben Virani Science College, Rajkot

Please note:

- This certificate is valid only for the specified audit period.
- The certificate may be revoked if there are changes to the institution's green practices or if the provided data is found to be misleading.
- The audit findings are solely based on the data submitted by the institution and the observations made by the audit team during the audit.

ATMIYA Group of Institutions, Yogidham Gurukul, Kalawad Road, Rajkot - 360 005, (GUJARAT) INDIA.
Ph.: +91 - 281 - 2562681 E-mail: admin@vsc.edu.in | principal@vsc.edu.in Website: www.vsc.edu.in

Registrar
Atmiya University
Rajkot

Atmiya University Rajkot

SWAMI SHREEJI

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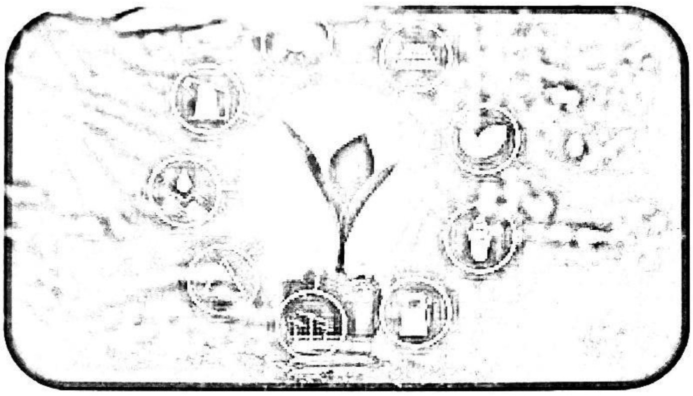
Rajkot

Atmiya University Rajkot

2 ENERGY AUDIT

2.1 ENERGY AUDIT REPORT-2019-20

ENERGY AUDIT REPORT



Atmiya University
Yogidham Gurukul, Kalawad Road,
Rajkot – 360005

Date: 20/05/2020

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Rajkot

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Acknowledgement

We feel quite fortunate that Hon. P P Shri Tyagvallabh Swamiji has given us the opportunity to conduct Energy audit at Atmiya University, Yogidham Gurukul, Rajkot.

Several energy conservation measures have been identified and proposed in course of study and these options when implemented are expected to bring in lasting benefits in term of energy saving as well as cost saving to the management.

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Mrs. Seema V. Vachhani
Energy Auditor
EA-25555

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Rajkot

Atmiya University Rajkot

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Atmiya University
Rajkot

1. Introduction

Energy audit is to reduce the amount of energy used in the organization without compromising the output. Energy auditing and management of energy consumption is to offer goods or services at the lowest possible cost and with the least amount of environmental effects. The audit team provides suggestions for better energy utilization.

2. Need for an Energy Audit

The need for energy audit arises from the importance of energy efficiency and sustainability in today's world. Energy audit serves several purposes and provides numerous benefits, including:

a. Identifying energy conservation opportunities by analyzing energy use and identifying areas where energy is being wasted or inefficiently used.

b. Cost reduction: Energy cost represents a significant part of total cost for any organization. An energy audit helps to identify energy-saving measures that can lead to cost reductions by reducing energy waste, optimizing equipment performance, and improving operational efficiency.

c. Environmental sustainability: Energy consumption is closely linked to environmental impact, particularly in terms of greenhouse gas emissions and climate change. By conducting an energy audit, organizations can identify ways to reduce their carbon footprint and contribute to environmental sustainability goals.

d. Compliance with regulations and standards: By proactively addressing compliance issues, organizations can avoid penalties and maintain a positive reputation.

e. Energy management and planning: An energy audit provides valuable data and insights that enable organizations to develop comprehensive energy management plans.

3. Systems studied during Energy Audit

a. Status of lighting fixtures have been checked, verified and recorded, physically.

b. Reviewed implemented non-conventional energy installation and applications in the institute for use.

c. Electricity bills served by PGVCL are verified and worked out for cost of power.

d. Energy conservation measures are reviewed.

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Atmiya University
Rajkot

4. Statistical Data& Observations

Atmiya Campus is educational organization and it uses majorly electricity as input energy source for application of various university activities. The electricity is procured from PGVCL by HT connection of 900 kVA. PGVCL serves monthly electricity bill for payment & on receipt of monthly electricity bill it is paid. Standby power source DG set of (625+320) kVA is available to use during power failure from PGVCL.

A) Average Cost of Power

Monthly electricity bill is served by PGVCL against electricity used & is paid by university. A cost of power is worked out from total kWh used & associated cost.

Table 1: Average cost of power

Sr. No.	Month of billing	Grid electricity consumed (kWh)	Grid electricity cost (INR)	Effective Unit energy cost (INR)
1	Apr-19	1,52,740	12,51,367	8.19
2	May-19	1,35,860	11,30,746	8.32
3	Jun-19	1,14,280	9,75,495	8.54
4	Jul-19	1,62,640	13,34,526	8.21
5	Aug-19	1,83,450	15,26,749	8.32
6	Sep-19	1,57,610	13,32,741	8.46
7	Oct-19	1,62,830	13,73,117	8.43
8	Nov-19	99,080	8,96,474	9.05
9	Dec-19	1,00,325	9,00,326	8.97
10	Jan-20	75,770	7,24,769	9.57
11	Feb-20	88,705	8,15,857	9.20
12	Mar-20	1,10,170	9,71,342	8.82

Effective Average cost of energy is Rs. 8.67 per unit. In the month of November, December 19 and January, February, March 20, unit energy cost is more than average value as maximum actual demand is quite lesser than 85% of contract demand.

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Rajkot

Atmiya University ★ Rajkot ★

B) % of Annual power met by RE resources:

Table 2: Annual power met by RE resources

Source of renewable energy	Solar roof top generation (kWh)	Grid electricity consumption (kWh)	Total electricity consumption (kWh)	% of renewable energy
Solar Rooftop	2,69,955	15,43,460	18,13,415	**14.88**

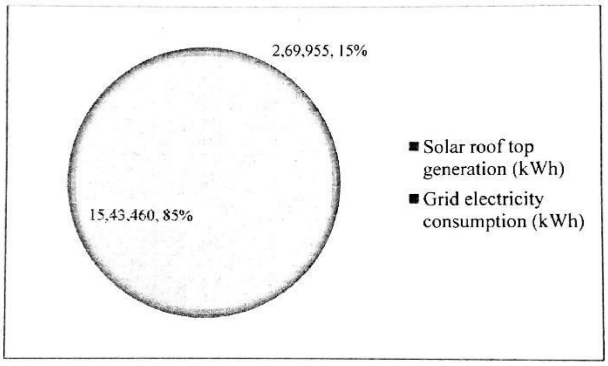

Fig. 1: % of Annual power met by RE resources

C) Green energy application per year and CO_2 Emission reduction

Table 3: CO_2 Emission reduction

Total annual energy requirement (kWh)	18,13,415
Total application of the green energy (kWh)	2,69,955
Estimated CO_2 green house gas emission reduction per year (Ton)	213.264

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Rajkot

Atmiya University Rajkot

D) Solar PV Power generation and cost saving

Table 4: Solar PV generation and associated cost saving

Sr. No.	Billing Month	RE generation (kWh)	Effective unit electricity cost (INR)	Cost saving (INR)
1	Apr-19	28,673	8.19	2,34,832
2	May-19	30,920	8.32	2,57,254
3	Jun-19	23,711	8.54	2,02,492
4	Jul-19	21,180	8.21	1,73,888
5	Aug-19	15,144	8.32	1,25,998
6	Sep-19	16,634	8.46	1,40,724
7	Oct-19	17,936	8.43	1,51,200
8	Nov-19	24,740	9.05	2,23,897
9	Dec-19	22,309	8.97	2,00,112
10	Jan-20	23,540	9.57	2,25,278
11	Feb-20	26,538	9.20	2,44,150
12	Mar-20	18,630	8.82	1,64,317
Total for Year 2019-20		2,51,325		23,44,141

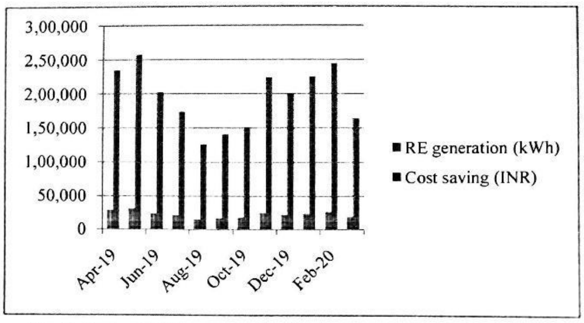

Fig. 2: Solar PV Power generation and associated cost saving

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5. Steps taken for Energy Conservation

Energy efficiency and conservation plays a pivotal role in addressing environmental and economic challenges, making it a critical component of sustainable development efforts worldwide. Atmiya University has grabbed the opportunity for energy saving using following methodologies and contributing to reduce carbon footprints.

a. Rooftop system: 450 kW of solar PV rooftop system is installed. Total 2,69,955 units of electricity have been generated by it in A.Y. 2019-20. Due to this RE generation, carbon footprint of institute has been reduced by 2,13,264 kg.
b. LED light: Much of the lighting requirement is met through LED lights. LED lights are much Energy efficient than fluorescent lights.
c. Natural ventilation: Good ventilation is observed in the institute.
d. Average power factor of 0.996 is maintained, which is appreciable.

6. Recommendations for Improving Energy Efficiency and Energy Conservation

a. Major of fans are of conventional type (50 W). Conventional exhaust fans must be replaced by energy efficient star rated exhaust fans.
b. Partial lighting requirement of the institute is met with florescent tube lights. LED lights of the same rating provide much more luminance than florescent tubes. Hence florescent tubes must be replaced immediately by LEDs.
c. As electricity charges are minimum during 10 pm to 6 am, works like all water tank filling must be encouraged during this time interval.
d. Energy conservation awareness programs may be conducted in the campus for creating better usage of electricity.
e. Conventional fans take more power than BLDC fans for same amount of output. With time, BLDC fans must be installed whenever replacement of fans is needful.

Prepared By:

20.06.20

Seema Vachhani
Certified Energy Auditor
Reg. No. EA-25555
Bureau of Energy Efficiency, India.

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Atmiya University
Rajkot

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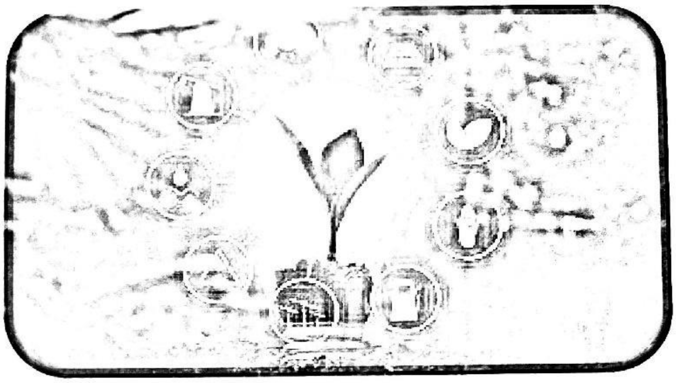
2.2 ENERGY AUDIT REPORT-2020-21

ENERGY AUDIT REPORT



Atmiya University
Yogidham Gurukul, Kalawad Road,
Rajkot – 360005

Date: 05/05/2021

Registrar
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Rajkot

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Table 1: Average cost of power

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1	Apr-20	58,990	4,27,523	7.25
2	May-20	72,155	6,65,801	9.23
3	Jun-20	1,15,035	9,82,641	8.54
4	Jul-20	1,15,245	9,85,852	8.55
5	Aug-20	97,880	8,70,942	8.90
6	Sep-20	86,720	7,87,712	9.08
7	Oct-20	73,295	6,89,906	9.41
8	Nov-20	68,060	6,38,574	9.38
9	Dec-20	49,560	5,10,274	10.30
10	Jan-21	50,600	5,17,850	10.23
11	Feb-21	61,020	5,90,514	9.68
12	Mar-21	89,320	7,92,529	8.87

Effective Average cost of energy is INR 9.12 per unit. In the month of May, October, November, December 20 and January, February 21, unit energy cost is more than average value as maximum actual demand is quite lesser than 85% of contract demand.

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Rajkot

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B) % of Annual power met by RE resources:

Table 2: Annual power met by RE resources

Source of renewable energy	Solar roof top generation (kWh)	Grid electricity consumption (kWh)	Total electricity consumption (kWh)	% of renewable energy
Solar Rooftop	2,95,899	9,37,880	12,33,779	**23.98**

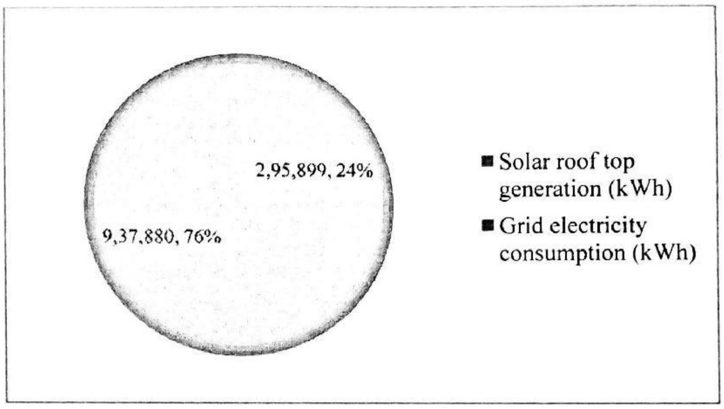

Fig. 1: % of Annual power met by RE resources

C) Green energy application per year and CO_2 Emission reduction

Table 3: CO_2 Emission reduction

Total annual energy requirement (kWh)	12,33,779
Total application of the green energy (kWh)	2,95,899
Estimated CO_2 green house gas emission reduction per year (Ton)	208.017

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Rajkot

Atmiya University Rajkot

D) Solar PV Power generation and cost saving

Table 4: Solar PV generation and associated cost saving

Sr. No.	Billing Month	RE generation (kWh)	Effective unit electricity cost (INR)	Cost saving (INR)
1	Apr-20	38,737	7.25	2,80,843
2	May-20	29,866	9.23	2,75,663
3	Jun-20	22,195	8.54	1,89,545
4	Jul-20	21,712	8.55	1,85,638
5	Aug-20	14,434	8.9	1,28,463
6	Sep-20	22,112	9.08	2,00,777
7	Oct-20	25,762	9.41	2,42,420
8	Nov-20	22,129	9.38	2,07,570
9	Dec-20	22,270	10.3	2,29,381
10	Jan-21	24,591	10.23	2,51,566
11	Feb-21	23,961	9.68	2,31,942
12	Mar-21	28,130	8.87	2,49,513
Total for Year 2020-21		**2,95,899**		**26,73,322**

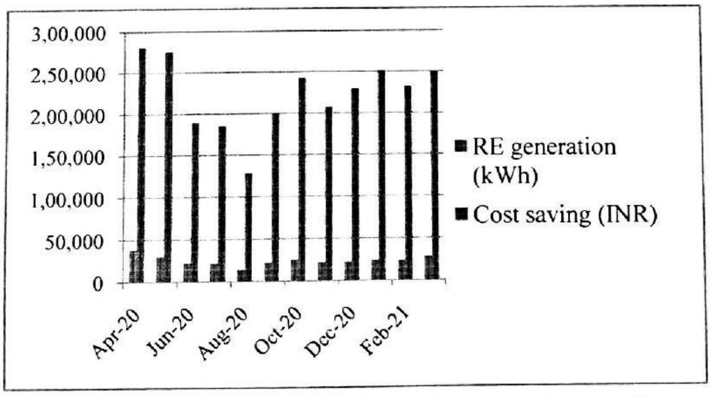

Fig. 2: Solar PV Power generation and associated cost saving

4

Registrar
Atmiya University
Rajkot

Atmiya University
Rajkot

5. Steps taken for Energy Conservation

Energy efficiency and conservation plays a pivotal role in addressing environmental and economic challenges, making it a critical component of sustainable development efforts worldwide. Atmiya University has grabbed the opportunity for energy saving using following methodologies and contributing to reduce carbon footprints.

a. Rooftop system: 450 kW of solar PV rooftop system is installed. Total 2,95,899 units of electricity have been generated by it in A.Y. 2020-21. Due to this RE generation, carbon footprint of institute has been reduced by 2,08,017 kg.

b. LED light: Much of the lighting requirement is met through LED lights. LED lights are much Energy efficient than fluorescent lights.

c. Natural ventilation: Good ventilation is observed in the institute.

d. Average power factor of 0.9965 is maintained, which is appreciable.

6. Recommendations for Improving Energy Efficiency and Energy Conservation

a. Comfortable air conditioned temperature is 24°C.
By setting the thermostat at comfort temperature, 24% saving on Electricity consumption is possible.

b. Major proportion of fans are of conventional type (50 W).
Approx. power consumption per year for a conventional fan is 50*8*300 = 120 kWh.
Running Cost per year per fan is INR 5.05*120 = INR 606
If BLDC fans of 28 W are installed,
Running cost per year per fan is 28*8*300 = INR67.2*5.05 = INR 339
Cost saving of Electricity per fan = 606-339 = INR 267
Cost of installation BLDC fan = INR 3300
Capital cost recovery time = 3300/267 = 12 year
Hence, in case of need of replacement of fans, conventional fans must be replaced by BLDC fans only.

c. Time independent works like all water tank filling must be encouraged during time interval of 10 pm to 6 am. This will fetch night usage concession and electricity units consumed in this interval will be charged at lower electricity rates.

d. Also, time independent activities must avoid during peak time intervals 7am to 11am and 6pm to 10pm. The power usage in these intervals will be

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charged at bit higher than normal electricity charges.

e. Power saving boards must be displayed at multiple locations.

f. Energy conservation awareness programs may be conducted in the campus for creating better usage of Electricity.

Prepared By:

05.05.21

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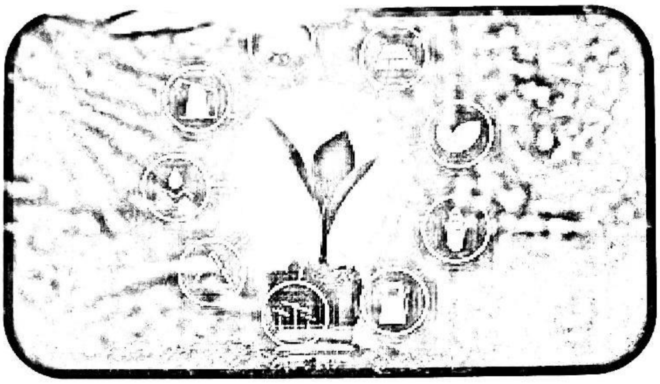
2.3 ENERGY AUDIT REPORT-2021-22

ENERGY AUDIT REPORT



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Yogidham Gurukul, Kalawad Road,
Rajkot – 360005

Date: 14/04/2022

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Acknowledgement

We feel quite fortunate that Hon. P P Shri Tyagvallabh Swamiji has given us the opportunity to conduct Energy audit at Atmiya University, Yogidham Gurukul, Rajkot.

Several energy conservation measures have been identified and proposed in course of study and these options when implemented are expected to bring in lasting benefits in term of energy saving as well as cost saving to the management.

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1. Introduction

Energy audit is to reduce the amount of energy used in the organization without compromising the output. Energy auditing and management of energy consumption is to offer goods or services at the lowest possible cost and with the least amount of environmental effects. The audit team provides suggestions for better energy utilization.

2. Need for an Energy Audit

The need for energy audit arises from the importance of energy efficiency and sustainability in today's world. Energy audit serves several purposes and provides numerous benefits, including:

a. Identifying energy conservation opportunities by analyzing energy use and identifying areas where energy is being wasted or inefficiently used.
b. Cost reduction: Energy cost represents a significant part of total cost for any organization. An energy audit helps to identify energy-saving measures that can lead to cost reductions by reducing energy waste, optimizing equipment performance, and improving operational efficiency.
c. Environmental sustainability: Energy consumption is closely linked to environmental impact, particularly in terms of greenhouse gas emissions and climate change. By conducting an energy audit, organizations can identify ways to reduce their carbon footprint and contribute to environmental sustainability goals.
d. Compliance with regulations and standards: By proactively addressing compliance issues, organizations can avoid penalties and maintain a positive reputation.
e. Energy management and planning: An energy audit provides valuable data and insights that enable organizations to develop comprehensive energy management plans.

3. Systems studied during Energy Audit

a. Status of lighting fixtures have been checked, verified and recorded, physically.
b. Reviewed implemented non-conventional energy installation and applications in the institute for use.
c. Electricity bills served by PGVCL are verified and worked out for cost of power.
d. Energy conservation measures are reviewed.

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4. Statistical Data& Observations

Atmiya Campus is educational organization and it uses majorly electricity as input energy source for application of various university activities. The electricity is procured from PGVCL by HT connection of 900 kVA. PGVCL serves monthly electricity bill for payment & on receipt of monthly electricity bill it is paid. Standby power source DG set of (625+320) kVA is available to use during power failure from PGVCL.

A) Average Cost of Power

Monthly electricity bill is served by PGVCL against electricity used & is paid by university. A cost of power is worked out from total kWh used & associated cost.

Table 1: Average cost of power

Sr. No.	Month of billing	Grid electricity consumed (kWh)	Grid electricity cost (INR)	Effective Unit energy cost (INR)
1	April-21	1,14,825	9,64,621	8.40
2	May-21	78,650	7,08,672	9.01
3	June-21	1,06,660	9,10,956	8.54
4	July-21	1,13,580	9,57,315	8.43
5	Aug-21	1,29,005	10,84,237	8.40
6	Sept-21	1,30,520	10,96,358	8.40
7	Oct-21	1,67,772	13,74,455	8.19
8	Nov-21	87,747	7,22,637	8.24
9	Dec-21	84,474	7,67,538	9.09
10	Jan-22	71,669	6,28,400	8.77
11	Feb-22	53,074	5,15,213	9.71
12	March-22	79,497	7,42,835	9.34

Effective Average cost of energy is Rs. 8.71 per unit. In the month of May, December 21 and January, February, March 22, unit energy cost is more than average value as maximum actual demand is quite lesser than 85% of contract demand.

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B) % of Annual power met by RE resources:

Table 2: Annual power met by RE resources

Source of renewable energy	Solar roof top generation (kWh)	Grid electricity consumption (kWh)	Total electricity consumption (kWh)	% of renewable energy
Solar Rooftop	3,57,884	12,17,473	15,75,357	**22.71**

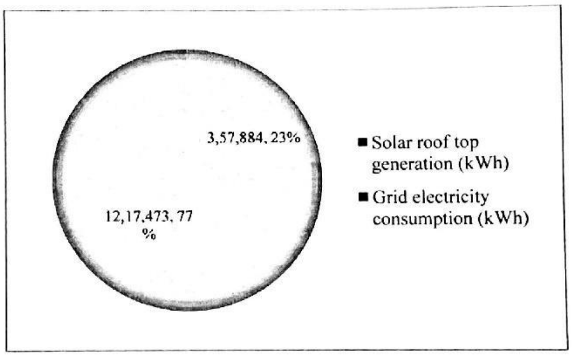

Fig. 1: % of Annual power met by RE resources

C) Green energy application per year and CO_2 Emission reduction

Table 3: CO_2 Emission reduction

Total annual energy requirement (kWh)	15,75,357
Total application of the green energy (kWh)	3,57,884
Estimated CO_2 green house gas emission reduction per year (Ton)	255.8871

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D) Solar PV Power generation and cost saving

Table 4: Solar PV generation and associated cost saving

Sr. No.	Billing Month	RE generation (kWh)	Total Electricity Consumption (kWh)	Effective unit electricity cost (INR)	Cost saving (INR)
1	Apr-21	24,533	1,14,825	8.4	2,06,077
2	May-21	22,452	78.650	9.01	2,02,293
3	Jun-21	20,781	1,06,660	8.54	1,77,470
4	Jul-21	9,458	1,13,580	8.43	79,731
5	Aug-21	8.619	1,29,005	8.4	72,400
6	Sep-21	0	1,30,520	8.4	0
7	Oct-21	37,696	1,67,772	8.19	3,08,730
8	Nov-21	43,792	87,747	8.24	3,60,846
9	Dec-21	39,408	84,474	9.09	3,58,219
10	Jan-22	48,137	71,669	8.77	4,22,161
11	Feb-22	55,776	53,074	9.71	5,41,585
12	Mar-22	47,232	79,497	9.34	4,41,147
Total for Year 2021-22		**3,57,884**	**12,17,473**		**31,70,658**

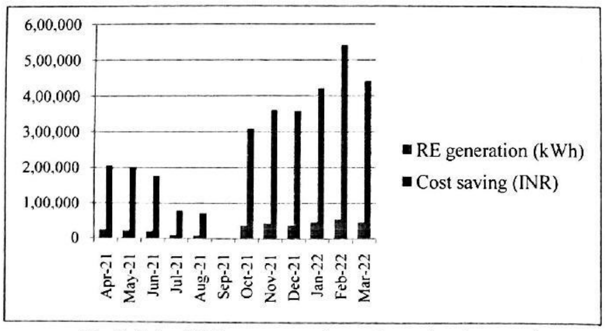

Fig. 2: Solar PV Power generation and associated cost saving

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5. Steps taken for Energy Conservation

Energy efficiency and conservation plays a pivotal role in addressing environmental and economic challenges, making it a critical component of sustainable development efforts worldwide. Atmiya University has grabbed the opportunity for energy saving using following methodologies and contributing to reduce carbon footprints.

a. Rooftop system: 450 kW of solar PV rooftop system is installed. Total 357884 units of electricity have been generated by it in A.Y. 2021-22. Due to this RE generation, carbon footprint of institute has been reduced by 2,55,887 kg.
b. LED light: Majority of lighting is through LED lights. LED lights are much Energy efficient than fluorescent lights.
c. Natural ventilation: Good ventilation is observed in the institute.
d. BLDC fan: It consumes almost 50% less energy than the conventional fan. The institute has installed it at some locations.
e. Average power factor of 0.983 is maintained, which is appreciable.

6. Recommendations for Improving Energy Efficiency and Energy Conservation in the Organization

a. Much of the working area of the institute is air conditioned. As per recommendations for building space cooling through recommended optimum temperature setting by BEE, by increasing the AC temperature by 1°C, we can save about 6% of Electricity. Typically, room temperature is set between 20-21°C whereas comfort temperature is 24-25°C. By setting the thermostat at comfort temperature, 24% saving on Electricity consumption is possible. Also, it is always better to run AC at 26+ degrees and put the fan on at slow speed, from energy conservation aspect.
b. Also, time independent activities must avoid during peak time intervals 7 am to 11 am and 6 pm to 10 pm. The power usage in these intervals will be charged at Rs. 5.05 per unit.
c. Energy conservation awareness programs may be conducted in the campus for creating better usage of Electricity.

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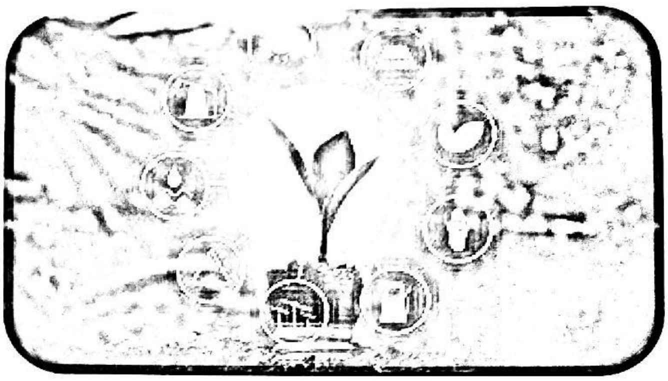
2.4 ENERGY AUDIT REPORT-2022-23

ENERGY AUDIT REPORT



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Acknowledgement

An energy audit is to identify energy-saving opportunities. It helps to understand energy usage and ways to use energy better. Conducting a routine energy audit ensures reduction in carbon foot print and continuing to be energy efficient by continuously employing new energy conservation techniques.

We are thankful to Hon. P P Shri Tyagvallabh Swamiji for giving opportunities to conduct Energy audit of various facilitates at Atmiya university campus.

This report is made with sincere efforts and gives details of relevant data collected during energy audit study, observation, analysis and recommendations made pertaining to different facilities in campus.

Several energy conservation measures have been identified and proposed in course of study and these options when implemented are expected to bring in lasting benefits in term of energy saving as well as cost saving to the management.

Research, Innovation and Translation cell is willing to support the management technically toward implementation of energy saving measures for deriving energy conservation and cost effective benefits.

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Dr. A. M. Kothari
Director – Research, Innovation & Translation
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1. About the Organization

Sarvoday Kelavani Samaj is a non government, non-profit organization, established in 1963 that works primarily in the domain of Education. It is spread in 23 acre land, situated at Rajkot city, Gujarat, India. The aim of Sarvoday Kelavani Samaj is to cultivate a new generation that is capable of creating a difference for the better future. Sarvoday Kelavani Samaj managed an autonomous Atmiya group of institutions. Later, Sarvoday Kelavani Samaj established Atmiya University in 2018 under Gujarat Private Universities Act, 2018.

2. Introduction

Energy audit is a comprehensive assessment which an in-depth analysis of energy consumption patterns, identifies potential areas for improvement and offers recommendations to enhance energy efficiency, reduce cost and minimize environmental impact.Prime objective of energy audit is to reduce the amount of energy used in the organization without compromising theoutput. The audit includes suggestions on alternative means and methods for achieving energy savings to a greater extend. In general, energy auditing and management ofenergy consumption is to offer goods or services at the lowest possible cost and with the least amount of environmental effects.

3. Need for an Energy Audit

The need for energy auditarises from the importance of energy efficiency and sustainability in today's world. Energy audit serves several purposes and provides numerous benefits, including:

a. Identifying energy conservation opportunities by analyzing energy use and identifying areas where energy is being wasted or inefficiently used.
b. Cost reduction: Energy cost represents a significant part of total cost for any organization. An energy audit helps to identify energy-saving measures that can lead to cost reductions by reducing energy waste, optimizing equipment performance, and improving operational efficiency.
c. Environmental Sustainability: Energy consumption is closely linked to environmental impact, particularly in terms of greenhouse gas emissions and climate change. By conducting an energy audit, organizations can identify ways to reduce their carbon footprint and contribute to environmental sustainability goals.
d. Compliance with Regulations and Standards: By proactively addressing compliance issues, organizations can avoid penalties and maintain a positive reputation.
e. Energy Management and Planning: An energy audit provides valuable data and insights that enable organizations to develop comprehensive energy management plans.

4. Aims and objective of energy audit

The aim of an energy audit is to identify the energy efficiency, conservation and

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savings opportunities at the premises of the audit sites in as systematic manner. The audit process is carried out with the following objectives.

a. Review of energy saving opportunities and measures implemented in the auditsites.
b. Identification of additional various energy conservation measures and savingopportunities.
c. Implementation of alternative energy resources for energy saving opportunities and decision making in the field of energy management.
d. Providing technical information on how to build an energy balance as well as guidance to be sought for particular applications.
e. Detailed analysis on the calculation of energy consumption, analysis of latest electricity bill of the campus, understanding the tariff plan provided by state electricity board.

5. Energy Audit Methodology

The audit involves visiting physical position of load and carry out inventory of load. Due measurement of electrical load of equipment and circuit is carried out. Energy bill received from PGVCL is audited and studied for kWh requirement and how efficiently energy is used. Various positions are interacted, familiarized with energy audit and involved for successful and result oriented energy audit. Energy conservation and saving opportunities are identified for implementation.

6. Systems studied during Energy Audit

a. Lighting fixtures have been physically in various campuses verified and recorded.
b. Reviewed implemented non-conventional energy installation and applications in university for use.
c. Electricity bills served by PGVCL are verified and worked out for cost of power.
d. It is reviewed about Awareness program if any for optimum use of electricity and water as well as its saving undertaken at the university level. There is tremendous scope to create awareness among user about efficient andoptimum use of energy and water to save. Instruction cum Request Sign board shall be displayed near eachswitch-board and toilet block to influence andto guide user to arrest misuse and wastage of power and water.

7. Statistical Data& Observations

Atmiya Campus is educational organization and it uses majorly electricity as input energy source for application of various university activities. The electricity is procured from PGVCL by HT connection of 900 kVA. PGVCL serves monthly electricity bill for payment & on receipt of monthly electricity bill it is paid. Standby power source DG set of (625+320) kVA is available to use during power failure from PGVCL.

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A) Average Cost of Power

Monthly electricity bill is served by PGVCL against electricity used & is paid by university. A cost of power is worked out from total kWh used & their amount.

Table 1: Average cost of power

Sr. No.	Month of billing	Grid electricity consumed (kWh)	Grid electricity cost(INR)	Effective Unit energy cost (INR).
1	April-22	1,31,681	11,35,373	8.62
2	May-22	1,38,424	12,01,141	8.68
3	June-22	1,39,783	12,49,675	8.94
4	July-22	1,54,323	13,68,851	8.87
5	Aug-22	1,46,969	13,30,354	9.05
6	Sept-22	1,46,065	13,25,749	9.08
7	Oct-22	1,55,375	13,77,529	8.87
8	Nov-22	91,664	8,92,473	9.74
9	Dec-22	95,057	9,20,935	9.69
10	Jan-23	76,331	7,83,885	10.27
11	Feb-23	71,931	7,54,715	10.49
12	March-23	99,575	9,81,430	9.86

Effective Average cost of energy is Rs. 9.35per unit. In the month of November, December 22 and January, February, March23, unit energy cost is more than average value as maximum actual demand is quite lesser than 85% of contract demand.

B) Total % of LED Lighting Load in Total Lighting Load:

Table 2: % of LED lighting

Particulars	Total lighting requirement	Lighting requirement met by LED lights	Lighting through other type of lamp
Load (kW)	37.087	35.487	1.6
Annual Consumption (kWh)	66,756.6	63,876	2,880

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C) % of Annual power met by RE resources:

Table 3: Annual power met by RE resources

Source of renewable energy	Solar roof top generation (kWh)	Grid electricity consumption (kWh)	Total electricity consumption (kWh)	% of renewable energy
Solar Rooftop	3,72,250	14,47,178	18,19,428	20.46%

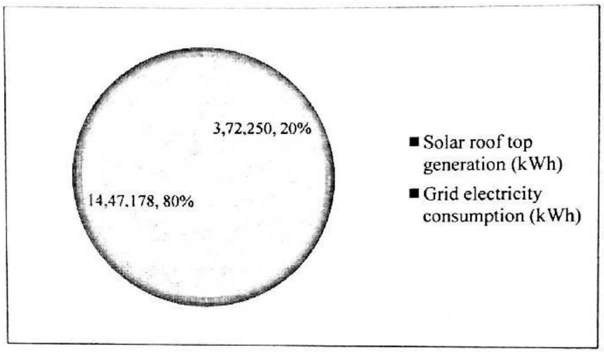

Fig. 1: % of Annual power met by RE resources

D) Green energy application per year and CO_2 Emission reduction

Table 4: CO_2 Emission reduction

Total annual energy requirement (kWh)	18,19,428
Total application of the green energy(kWh)	3,72,250
% on total requirement	20.46%
Estimated CO_2green house gas emission reduction per year (Ton)	266.531

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E) Solar PV Power generation and cost saving

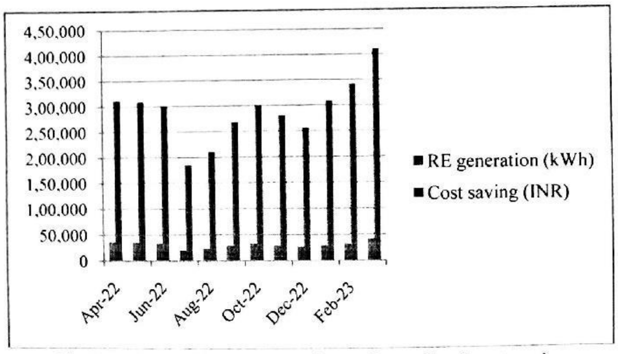

Fig. 2: Solar PV Power generation and associated cost saving

Table 5: Solar PV generation and associated cost saving

Sr. No.	Billing Month	RE generation (kWh)	Total Electricity Consumption (kWh)	Effective unit electricity cost (INR)	Cost saving (INR)
1	Apr-22	36,176	1,31,681	8.62	3,11,837
2	May-22	35,568	1,38,424	8.68	3,08,730
3	Jun-22	33,642	1,39,783	8.94	3,00,759
4	Jul-22	20,784	1,54,323	8.87	1,84,354
5	Aug-22	23,264	1,46,969	9.05	2,10,539
6	Sep-22	29,568	1,46,065	9.08	2,68,477
7	Oct-22	33,664	1,55,375	8.87	2,98,600
8	Nov-22	28,864	91,664	9.74	2,81,135
9	Dec-22	26,432	95,057	9.69	2,56,126
10	Jan-23	30,064	76,331	10.27	3,08,757
11	Feb-23	32,576	71,931	10.49	3,41,722
12	Mar-23	41,648	99,575	9.86	4,10,649
Total for Year 2022-23		**3,72,250**	**14,47,178**		**34,81,687**

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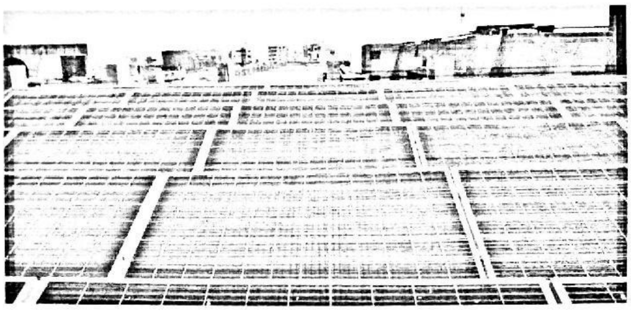
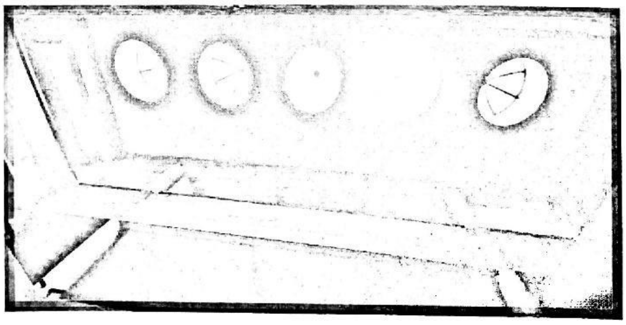
8. Steps taken for Energy Conservation

A) Solar PV Power Generation



B) Lighting through LED lights

C) Use of Natural Lights through Sun Roofs



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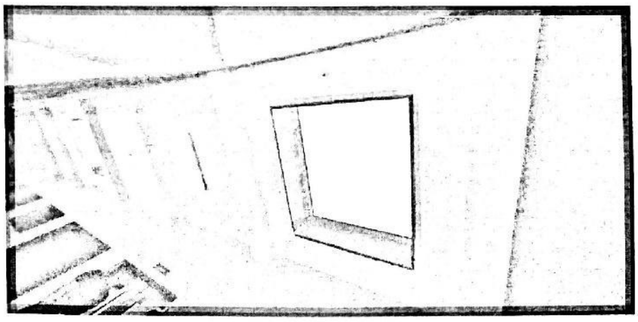
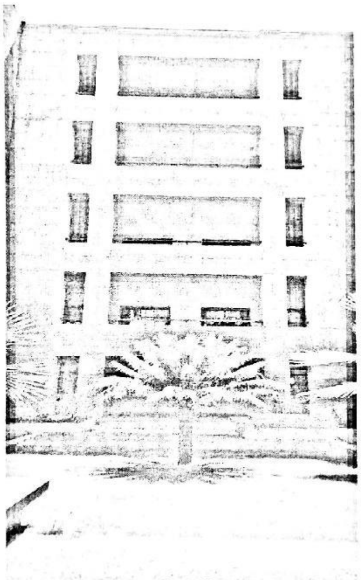


D) Use of Natural Ventilation



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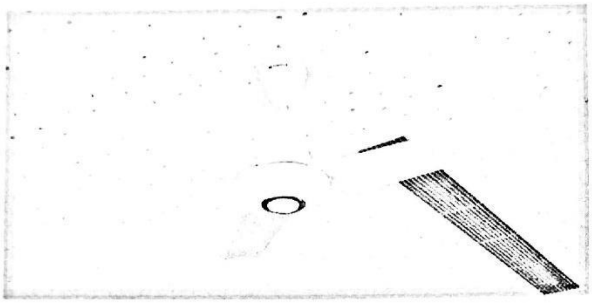
E) Installation of BLDC fans in new building



F) Power factor is maintained nearly at 0.999, which is quite appreciable.

9. Recommendations for Improving Energy Efficiency and Energy Conservation in the Organization

A) There is great power saving opportunities by using automation tools.

- ✓ In toilets, motion sensors can be used to switch on the lights when occupancy is there and to switch off the lights when occupancy is not there. This can reduce toilet Electrical load by much extent.
- ✓ Considering 120 toilet blocks with 2 no. of 22 Watt tube lights,
- ✓ Approx. power consumption per year is 106*120 = 12,720kWh.
- ✓ Considering unit charges in peak hours INR 5.05,
- ✓ Running Cost per year is INR 535*120 = INR 64,200
- ✓ If motion sensor is installed, Running cost per year is INR 66*120 = INR7,920
- ✓ Cost saving on Electricity charges = 64,200-7,920 = INR 56,280
- ✓ Cost of installation of motion sensor is INR 700*120 = INR 84000
- ✓ **Capital cost recovery time = 84,000/56,280 = 1.49 year**

B) All the corridors of the building are highly illuminated during all working hours INR As an automation tool, dimmable lights with sensors may be used for energy conservation.

Considering 11 LEDs of 12 Watt working 10 hours in a day, for each corridor illumination

- ✓ Approx. power consumption per year for a corridor is 12*11*10*300 = 396kWh.
- ✓ Running Cost per year is INR 5.05*396 = INR 2,000
- ✓ If dimmable lights are installed,
  Running cost per year is (12*11*2*300) + (3*11*8*300) = INR158.4*5.05 = INR 800

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- ✓ Cost saving of Electricity = 2,000-800 = INR 1,200
- ✓ Cost of installation of dimmable lights is INR 715*11 = INR 7,865
- ✓ **Capital cost recovery time = 7,865/1,200= 6.5 year**

C) Time independent works like all water tank filling must be encouraged during time interval of 10 pm to 6 am. This will fetch night usage concession and Electricity units consumed in this interval will be charged at **INR 3.77 per unit**.

D) Also, time independent activities must avoid during peak time intervals 7am to 11am and 6pm to 10pm. The power usage in these intervals will be charged at **INR 5.05 per unit.**

E) Power saving boards must be displayed at multiple locations.

F) Energy conservation awareness programs may be conducted in the campus for creating better usage of Electricity.

G) Currently, few Fluorescent lights are in use in the campus. These lights must be replaced by LED lights earliest.

H) Major proportion of fans are of conventional type (50 W).
Approx. power consumption per year for a conventional fan is 50*8*300 = 120 kWh.
Running Cost per year per fan is INR 5.05*120 = INR 606
If BLDC fans of 28 W are installed,
Running cost per year per fan is 28*8*300 = INR67.2*5.05 = INR 339
Cost saving of Electricity per fan = 606-339 = INR 267
Cost of installation BLDC fan = INR 3300
Capital cost recovery time = 3300/267 = 12 year
Hence, in case of need of replacement of fans, conventional fans must be replaced by BLDC fans only.

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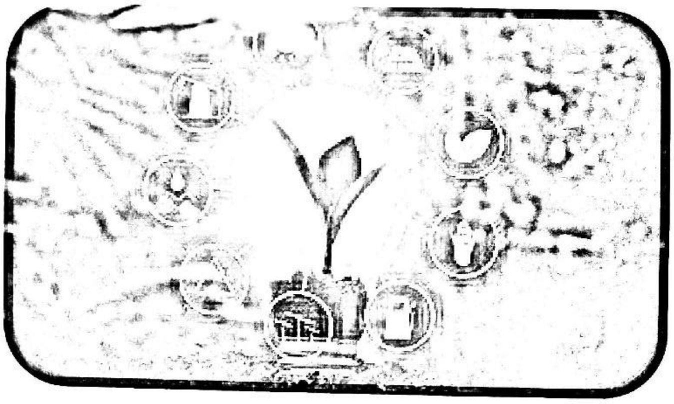
2.5 ENERGY AUDIT REPORT-2023-24

ENERGY AUDIT REPORT



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Research, Innovation and Translation cell is willing to support the management technically toward implementation of energy saving measures for deriving energy conservation and cost effective benefits.

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1. About the Organization

Sarvoday Kelavani Samaj is a non government, non-profit organization, established in 1963 that works primarily in the domain of Education. It is spread in 23 acre land, situated at Rajkot city, Gujarat, India. The aim of Sarvoday Kelavani Samaj is to cultivate a new generation that is capable of creating a difference for the better future. Sarvoday Kelavani Samaj managed an autonomous Atmiya group of institutions. Later, Sarvoday Kelavani Samaj established Atmiya University in 2018 under Gujarat Private Universities Act, 2018.

2. Introduction

Energy audit is a comprehensive assessment which an in-depth analysis of energy consumption patterns, identifies potential areas for improvement and offers recommendations to enhance energy efficiency, reduce cost and minimize environmental impact. Prime objective of energy audit is to reduce the amount of energy used in the organization without compromising the output. The audit includes suggestions on alternative means and methods for achieving energy savings to a greater extend. In general, energy auditing and management of energy consumption is to offer goods or services at the lowest possible cost and with the least amount of environmental effects.

3. Need for an Energy Audit

The need for energy audit arises from the importance of energy efficiency and sustainability in today's world. Energy audit serves several purposes and provides numerous benefits, including:

a. Identifying energy conservation opportunities by analyzing energy use and identifying areas where energy is being wasted or inefficiently used.
b. Cost reduction: Energy cost represents a significant part of total cost for any organization. An energy audit helps to identify energy-saving measures that can lead to cost reductions by reducing energy waste, optimizing equipment performance, and improving operational efficiency.
c. Environmental Sustainability: Energy consumption is closely linked to environmental impact, particularly in terms of greenhouse gas emissions and climate change. By conducting an energy audit, organizations can identify ways to reduce their carbon footprint and contribute to environmental sustainability goals.
d. Compliance with Regulations and Standards: By proactively addressing compliance issues, organizations can avoid penalties and maintain a positive reputation.
e. Energy Management and Planning: An energy audit provides valuable data and insights that enable organizations to develop comprehensive energy management plans.

4. Aims and objective of energy audit

The aim of an energy audit is to identify the energy efficiency, conservation and

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savings opportunities at the premises of the audit sites in as systematic manner. The audit process is carried out with the following objectives.

a. Review of energy saving opportunities and measures implemented in the audit sites.
b. Identification of additional various energy conservation measures and saving opportunities.
c. Implementation of alternative energy resources for energy saving opportunities and decision making in the field of energy management.
d. Providing technical information on how to build an energy balance as well as guidance to be sought for particular applications.
e. Detailed analysis on the calculation of energy consumption, analysis of latest electricity bill of the campus, understanding the tariff plan provided by state electricity board.

5. Energy Audit Methodology

The audit involves visiting physical position of load and carry out inventory of load. Due measurement of electrical load of equipment and circuit is carried out. Energy bill received from PGVCL is audited and studied for kWh requirement and how efficiently energy is used. Various positions are interacted, familiarized with energy audit and involved for successful and result oriented energy audit. Energy conservation and saving opportunities are identified for implementation.

6. Systems studied during Energy Audit

a. Lighting fixtures have been physically in various campuses verified and recorded.
b. Reviewed implemented non-conventional energy installation and applications in university for use.
c. Electricity bills served by PGVCL are verified and worked out for cost of power.
d. It is reviewed about Awareness program if any for optimum use of electricity and water as well as its saving undertaken at the university level. There is tremendous scope to create awareness among user about efficient and optimum use of energy and water to save. Instruction cum Request Sign board shall be displayed near each switch-board and toilet block to influence and to guide user to arrest misuse and wastage of power and water.

7. Statistical Data& Observations

Atmiya Campus is educational organization and it uses majorly electricity as input energy source for application of various university activities. The electricity is procured from PGVCL by HT connection of 900 kVA. PGVCL serves monthly electricity bill for payment & on receipt of monthly electricity bill it is paid. Standby power source DG set of (625+320) kVA is available to use during power failure from PGVCL.

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A) Average Cost of Power

Monthly electricity bill is served by PGVCL against electricity used & is paid by university. A cost of power is worked out from total kWh used & their amount.

Table 1: Average cost of power

Sr. No.	Month of billing	Grid electricity consumed (kWh)	Grid electricity cost (INR)	Effective Unit energy cost (INR)
1	Apr-23	1,13,646	10,95,096	9.64
2	May-23	1,21,355	11,82,304	9.74
3	Jun-23	1,38,105	13,24,044	9.59
4	Jul-23	1,50,730	14,50,845	9.63
5	Aug-23	1,69,125	16,57,664	9.80
6	Sep-23	1,43,030	14,09,279	9.85
7	Oct-23	1,56,480	15,48,450	9.90
8	Nov-23	1,29,110	12,91,410	10.00
9	Dec-23	87,850	9,09,604	10.35
10	Jan-24	89,135	9,35,318	10.49
11	Feb-24	96,240	9,95,139	10.34
12	Mar-24	1,06,830	10,37,012	9.71

Effective Average cost of energy is INR 9.92 per unit. In the month of November, December 23 and January, February 23, unit energy cost is more than average value as maximum actual demand is quite lesser than 85% of contract demand.

B) Total % of LED Lighting Load in Total Lighting Load:

Table 2: % of LED lighting

Particulars	Total lighting requirement	Lighting requirement met by LED lights	Lighting through other type of lamp
Load (kW)	41.034	39.54	1.49
Annual Consumption (kWh)	73,861.2	71,172	2,682

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C) % of Annual power met by RE resources:

Table 3: Annual power met by RE resources

Source of renewable energy	Solar roof top generation (kWh)	Grid electricity consumption (kWh)	Total electricity consumption (kWh)	% of renewable energy
Solar Rooftop	5,37,472	15,01,636	20,39,108	**26.35**

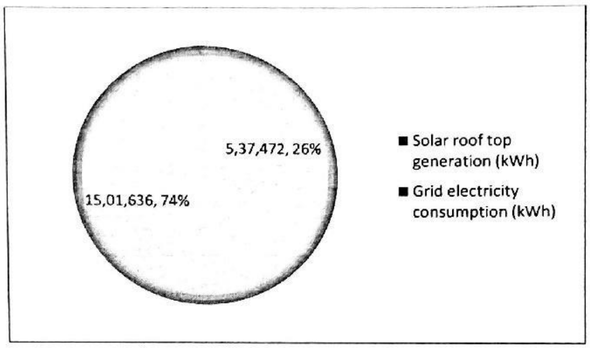

Fig. 1: % of Annual power met by RE resources

D) Green energy application per year and CO_2 Emission reduction

Table 4: CO_2 Emission reduction

Total annual energy requirement (kWh)	20,39,108
Total application of the green energy(kWh)	5,37,472
Estimated CO_2green house gas emission reduction per year (Ton)	180.719

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E) Solar PV Power generation and cost saving

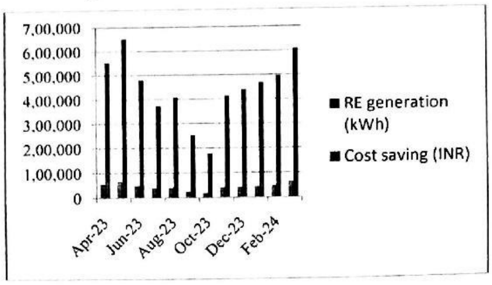

Fig. 2: Solar PV Power generation and associated cost saving

Table 5: Solar PV generation and associated cost saving

Sr. No.	Billing Month	RE generation (kWh)	Total Electricity Consumption (kWh)	Effective unit electricity cost (INR)	Cost saving (INR)
1	Apr-23	57,504	1,13,646	9.64	5,54,339
2	May-23	66,992	1,21,355	9.74	6,52,502
3	Jun-23	50,144	1,38,105	9.59	4,80,881
4	Jul-23	38,736	1,50,730	9.63	3,73,028
5	Aug-23	41,520	1,69,125	9.8	4,06,896
6	Sep-23	25,616	1,43,030	9.85	2,52,318
7	Oct-23	18,080	1,56,480	9.9	1,78,992
8	Nov-23	41,280	1,29,110	10	4,12,800
9	Dec-23	42,400	87,850	10.35	4,38,840
10	Jan-24	44,640	89,135	10.49	4,68,274
11	Feb-24	47,840	96,240	10.34	4,94,666
12	Mar-24	62,720	1,06,830	9.71	6,09,011
Total for Year 2023-24		**5,37,472**	**15,01,636**		**53,22,545**

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8. Recommendations for Improving Energy Efficiency and Energy Conservation in the Organization

A) Major proportion of fans are of conventional type (50 W).

Approx. power consumption per year for a conventional fan is 50*8*300 = 120 kWh.

Running Cost per year per fan is INR 5.05*120 = INR 606

If BLDC fans of 28 W are installed,

Running cost per year per fan is 28*8*300 = INR67.2*5.05 = INR 339

Cost saving of Electricity per fan = 606-339 = INR 267

Cost of installation BLDC fan = INR 3300

Capital cost recovery time = 3300/267 = 12 year

Hence, in case of need of replacement of fans, conventional fans must be replaced by BLDC fans only.

B) Time independent works like all water tank filling must be encouraged during time interval of 10 pm to 6 am. This will fetch night usage concession and Electricity units consumed in this interval will be charged at **INR 3.77 per unit**.

C) Also, time independent activities must avoid during peak time intervals 7am to 11am and 6pm to 10pm. The power usage in these intervals will be charged at **INR 5.05 per unit**.

D) Currently, few Fluorescent lights are in use in the campus. These lights must be replaced by LED lights earliest.

Prepared By:

24.05.24

Seema Vachhani
Certified Energy Auditor
Reg. No. : EA-25555
Bureau of Energy Efficiency, India
Atmiya University

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Policy document on environment and energy usage

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2.6 CERTIFICATES OF THE AWARDS RECEIVED FROM RECOGNIZED AGENCY

Reg No.: EA-25555

Certificate No.: 9565/19

राष्ट्रीय उत्पादकता परिषद

NATIONAL PRODUCTIVITY COUNCIL

National Productivity Council

(National Certifying Agency)

PROVISIONAL CERTIFICATE

This is to certify that Mr./ Mrs./ Ms. SEEMA VIPUL VACHHANI

son / daughter of Mr. MAHENDRABHAI *has passed the National certification Examination for Energy Auditors held in September 2018, conducted on behalf of the Bureau of Energy Efficiency, Ministry of Power, Government of India. He / She is qualified as* ***Certified Energy Manager*** *as well as* ***Certified Energy Auditor.***

He / She shall be entitled to practice as Energy Auditor under the Energy Conservation Act 2001, subject to the fulfillment of qualifications for Accredited Energy Auditor and issuance of certificate of Accreditation by the Bureau of Energy Efficiency under the said Act.

This certificate is valid till the Bureau of Energy Efficiency issues an official certificate.

Digitally Signed by:K V R RAJU
Mon Apr 22 16:22:09 IST 2019
Controller of Examination, NPC AIP Chennai

Place : Chennai, India
Date : 22nd April, 2019

Controller of Examination

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Energy Conservation Club of the University

URJA
Energy Conservation Club

Activity Report-1

ATMIYA UNIVERSITY
(Established under the Gujarat Private University Act 11, 2018)
Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

Energy Conservation Club

Consumer to Contributor

Date : 31.01.2024

CIRCULAR

All the students are hereby informed that the club is going to display making of fan and tube light installation layout for laboratories and class rooms, using Lucid chart software, as a pilot project from energy conservation aspect. Layout for other laboratories and classrooms will be done as club activity by students. Interested students may take the opportunity at room No. 50, B wing, Main Building at 11 O'clock onwards on 02.02.24.

Seema V. Vachhani
Coordinator

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ATMIYA UNIVERSITY
(Established under the Gujarat Private University Act 11, 2018)
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Report

Students' Clubs

Name of the Club: Energy Conservation Club

Date: 02/02/2024

Main Coordinator: Mrs. Seema V. Vachhani

Co –Coordinators: 1. Mr. Dhaval Y.Raval

2. Ms. Devangi Paneri

Time: 11:50 am to 1:40 pm

Venue: Room No. 50

No. of Faculty Coordinators present: 5

No. of Students present: 7

Description of the Club Activity carried out:

The club is going to display fan and tube light installation layout for some laboratories and class rooms, as pilot project from energy conservation aspect. Sample of this layout is made using Lucid chart software. Other layout will be done as club activity. So, today students were made aware regarding software and how to use it in easier way. Mr. Dhaval Raval explained the software to students in detail. Students had shown much interest for this activity.

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Visual Glimpses of the Event:

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Energy Conservation Club

"Journey from Consumer to Contributor"

Club Activity

Date: 02.02.24 **Time:** 11:50 AM **Venue:** Room No. 50

Sr.	Name	Mobile No.	Course & Semester	Sign
1	ZALA RUTURAJSINH	9510235230	B.Tech mech 4th	
2	bhatt harshdeep	6351445181	"	
3	Kishan Amethiya	9328593802	"	
4	Ambavadra uday	7227961950	"	
5	Parkhiya Henil N.	9925325643	Diploma com Auto Eng.	
6	Dhuvaisinh Rathod	7878392991	DCE	
7	TANVEER RAJYAGURU	9106316088	B tech Electrical Engineering	

Seema V. Vachhani
Coordinator

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Activity-2: Energy Conservation Awareness

ATMIYA UNIVERSITY

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Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

Energy Conservation Club

Consumer to Contributor

Date : 27.12.2023

CIRCULAR

All the students are hereby informed that the club is organizing a discussion on topic "Energy Conservation" as energy conservation is today's ever rising demand. Interested students may take the opportunity at room No. 50, B wing, Main Building at 11 O'clock onwards on 30.12.23.

Seema V. Vachhani
Coordinator

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Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

Report

Students' Clubs

Name of the Club: Energy Conservation Club

Date: 30/12/2023

Main Coordinator: Mrs. Seema V. Vachhani

Co –Coordinators: 1. Mr. Dhaval Raval

2. Ms. Devangi Paneri

Time: 11:50 am to 1:40 pm

Venue: Room No. 50

No. of Faculty Coordinators present: 3

No. of Students present: 3

Description of the Club Activity carried out:

The club today took the activity of Energy Conservation Awareness among the students. We use the energy in different forms for our day to day life, like thermal energy, electricity, water etc. Mrs. Seema Vachhani explained how different forms of energy can be saved by making minor changes in our habits. Also, it is explained in detail that how these energy conservation practices will be yielding benefits in terms of cost saving, sustainability. In addition to that, how energy conservation practices will lead to reduction in environmental impact of using energy discussed in detail.

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Visual Glimpses of the event:

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ATMIYA UNIVERSITY

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Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

Student Attendance:

ATMIYA UNIVERSITY

Energy Conservation Club

"Journey from Consumer to Contributor"

Club Activity

Date: 30-12-23 **Time:** 11:50 AM **Venue:** Room No. 50

Sr.	Name	Mobile No.	Course & Semester	Sign
1	Rangani Neer	9925773551	B.Tech. Electrical 4th Sem	[signature]
2.	Raman Harshit	9016057957	B.Tech. Electrical 4th sem	[signature]
3	Rakholiya Henil N.	9925925645	Diploma Computer	[signature]

Seema V. Vachhani

Coordinator

Registrar

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Club activity on Energy Conservation for IT & Computer Sector

ATMIYA UNIVERSITY
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Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

Energy Conservation Club

Consumer to Contributor

Date : 10.01.2024

CIRCULUR

All the students are hereby informed that the club is organizing a discussion on topic "Energy Conservation in IT & Computer sector" as energy conservation be today's ever rising demand. Interested students may take the opportunity at room No. 50, B wing, Main Building at 11 O'clock onwards on 13.01.2024.

Seema V. Vachhani
Co-ordinator

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Rajkot

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(Established under the Gujarat Private University Act 11, 2018)
Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

Report

Students' Clubs

Name of the Club: Energy Conservation Club

Date: 13/01/2024

Main Coordinator: Mrs. Seema V. Vachhani

Co –Coordinators: 1. Mr. Dhaval Y. Raval

2. Ms. Devangi Paneri

Time: 11:50 am to 1:40 pm

Venue: Room No. 50

No. of Faculty Coordinators present: 3

No. of Students present: 6

Description of the Club Activity carried out:

The club today took the activity of Energy Conservation practices in IT and Computer engineering field. Students were explained with energy consumption details of PC in on mode, standby mode and sleep mode. Also, students were urged to keep PC in sleep mode as it saves energy by much extent. Student were explained how software running in background keeps on consuming energy and how it affects the performance of the system.

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Visual Glimpse of the Event:

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ATMIYA UNIVERSITY

Energy Conservation Club

"Journey from Consumer to Contributor"

Club Activity

Date: 13.01.24 **Time:** 11:50 to 01:40PM **Venue:** Room No. 50

Sr.	Name	Mobile No.	Course & Semester	Sign
1	Pandya Nisarg	8926309081	5	
2	Ramani ~~Ateer~~ Harshit	7041057959	5	Hramani
3	Rangani Neer	9925225551	5	
4	Sheth Bhumik P.	9737573472	5	
5	Hardik solanki	6352007990	5	
6	Dobariya sahil	9265076175	5	

Seema V. Vachhani
Coordinator

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