NIZAM COLLEGE (AUTONOMOUS)

HYDERABAD-500001

ENERGYMANAGEMENT AUDIT REPORT





Prepared by

Energy management Assessment Team for the year 2021-22



Certificate

HÝM International Certifications Pvt. Ltd.

Certified that the Energy Management System of

NIZAM COLLEGE (AUTONOMOUS) A CONSITUENT COLLEGE OF OSMANIA UNIVERSITY

Basheerbagh, Hyderabad - 500 001, Telangana State, India

has been assessed and found to be in accordance with the requirements of the Energy standards

ISO 50001 : 2018

for the following scope of certification

IMPLEMENTATION OF ENERGY SAVING PRACTICES

Further Information about the scope of this certificate and applicability of ISO 50001: 2018 requirements may be obtained by consulting the organization.

Issue Date

10/06/2021

09/06/2024

1st Surveillance 09/06/2022



Renewal Date

2nd Surveillance 09/06/2023









Authorised Signature

Cartificate No : En91864140117

HYM International Certifications Pvt. Ltd.

NOTE: This Certificate is Valid From 09/06/2022 to 09/06/2023

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PRINCIPAL'S MESSAGE

Nizam College submits the results, suggestions, and possible energy-saving opportunities found after a thorough evaluation of the processes and facilities on the Campus. The audit objectives were to examine trends in energy use, spot inefficiencies, and offer workable solutions to improve energy efficiency and lower operating expenses. The report highlights the value of energy conservation as well as the college possible advantages in terms of cost savings, environmental sustainability, and regulatory compliance.

To complete this audit, number of parameters, were taken into consideration such as examining utility bills and metering data, consumption statistics for electricity, natural gas, water, and other pertinent resources. It established baseline energy usage profiles and benchmarked performance against industry norms. The viability of including renewable energy sources, such as solar photovoltaic (PV) systems, is an important suggestion offered by the audit team. Using Sensor Based technology is also a key point for conserving energy.

Nizam College can use this energy audit report as a useful road map to improve operational effectiveness, save energy expenses, and show environmental leadership in the cutthroat business world of today. Nizam College may meet its energy saving targets while producing enduring value for stakeholders and the community and SAVE THE PLANET by putting the suggested ideas into practice and adopting a sustainable culture.



ABOUT THE COLLEGE

Established in 1887 by the amalgamation of Hyderabad School and the Madarsa-i-Aliya, Nizam College is one of the oldest and most esteemed institutions of higher education in South India. It was affiliated to the University of Madras for 60 years after its inception, and was made a Constituent College of Osmania University on 19th February 1947.

Nizam College offers both undergraduate and postgraduate courses in the Faculties of Arts, Social Sciences, Commerce and Sciences in addition to professional courses such as MBA, MCA, M.Sc.(IS) and BCA. Several of our students are also pursuing doctoral and postdoctoral research. The college received the status of the College with Potential for Excellence both under the X Plan and the XI Plan period. The College is accredited by NAAC in March 2019 with 'B++' grade with a CGPA of 2.92.

The Placement Centre organizes on-campus recruitments involving industries and MNC's like Wipro, Infosys, Cognizant, Satyam, Nipuna, GE, etc. totaling to more than 25 to 50 reputed companies visit the college every year. Students come from a wide range of social status and different regions which creates a healthy atmosphere and an ambience of a global community with rich cultural exchange. Nizam College is foremost in the preference of students from various Asian and African countries. Foreign students constitute 25% of the total strength of the college.

VISION AND MISSION

Vision

To continue as a centre of excellence in education and research, and consolidate our position as are puted Institution of Higher Education.

Mission

 To build across the college a culture of excellence in teaching and learning, attract both global and national students and mould them into responsible future citizens through various support activities.

Core Values

- Provide the students with a teaching learning experience that develops in them the capacities for creativity, critical judgment, effective communication, and in-depth knowledge
- Enhance interaction with industry/ business /academic in teaching programmes through guestlectures, seminars, adjunct faculty programs, and industrial/business/academic internships forstudents
- Ensure effective evaluation of teaching/ learning curricula, co-curricular opportunities of students and teachers
- Provide incentives to teachers/learners for research and consultancy
- To develop an environment-friendly campus.
- Create innovators, leaders and entrepreneurs
- Achieve excellence in application-oriented research in different areas so as to contribute to development of the region and the nation
- Promote co-curricular activities for over-all personality development of the students
- Develop responsible citizenship through awareness and acceptance of value-based education
- Provide efficient administration and responsive support for all activities of the college
- Provide remedial courses to preferentially admitted students and special attention to the Divyangjan students.
- Ensure Gender Equity
- Build alumni family, friends to create a network of allegiance and support for college



OBJECTIVES OF ENERGY MANAGEMENT

- To achieve and maintain optimum energy procurement and utilization, throughout the organization
- To minimize energy costs/waste without affecting production & quality
- · To minimize environmental effects.
- Raising awareness of the importance of energy conservation
- Generate energy at the lowest possible rate
- Select low-investment technology to meet present requirements and environment conditions



CHECK LIST

The purpose of this checklist is to assist in systematically reviewing energy use in the college to identify focus areas that could benefit most from "energy efficiency" programmes. It provides a clear picture of which modifications and adjustments the college could make in order to achieve optimal and energy efficient operation.

- √ Energy Committee
- √ Energy Policy
- √ Energy objectives
- √ LED lights
- √ Solar panel details and capacity
- √ Total no. of power consumables
- √ Power consumed in watts
- √ Energy conservation methods
- √ Energy saving slogans



ORDERS

The following faculty are appointed as members for the Energy Audit Committee for the year 2021-22

1	Prof. B. Narayana	Chairman & Principal, Nizam College
2	Dr. C V Ranjani Anand	Coordinator
3	Dr. Parimala Kulkarni	Member
4	Dr. Melissa Helen	Member
5	Dr. Chand Pasha	Member
6	Dr. M. Radhika	Member
7	Ms. S. Sravanthi	Member
8	Dr. Humera Nazmeen	Member
9	Ms. D. Deepika	Member +
10	Dr. B. Radha Krishna	Member
11	Dr. B. Kumar	Member
12	Mr. Sujith (Student)	Member
13	Ms. B. Priyanka (Student)	Member

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NIZAM COLLEGE Autonomous Re-accredited by NAAC with B++



A Constituent College of Osmania University

Energy Audit Committee

S.No	Name	Designation	Signature
1.	B. Narayana	Chairman & Principal, Nizam College	benz
2.	Dr. C. V. Ranjani	Vice-Principal	Eantari one
3.	Dr. M. Radhika	Academic Coordinator	Cadhiles
4.	Dr. S. Balabrahma chary	Dept of Public Administration	×
5.	Dr. K. Srinivas	Dept of Commerce.	Bush
6.	Dr.B. Thirupathi	Dept of Business Management	Alimingal.
7.	Dr. S. Prasad	Dept of Chemistry	Sand
8.	Dr. K. Bhavani Shankar	Dept of Sociology.	
9.	Ms. Ashwini, Faculty	Dept of Psychology	deluz.
10.	Dr. V. Naveen Reddy	NCC Coordinator	Noi
11.	Smt. Geetha	Deputy Registrar	



INTRODUCTION

Energy management: The planning and operation of systems that produce, distribute, store, and consume energy.

Energy Management definition:

Human civilization relies on several sources of energy: the sun, plants, and animals in various forms, the splitting of atoms, gravity, the heat of the Earth, and rocks. These sources yield numerous forms of energy, including firewood (plants) and dung (animals) nuclear power (split atoms), tidal (gravity), coal (a rock), and many more.

Sources of energy can be **abiotic** (not derived from living things) or **biotic** (derived from living things).

Energy can be **renewable** (you can use it over and over) or **non-renewable** (once you use it, usually by burning it, then it is gone, and you have to find more). Different forms of energy are harnessed, stored, converted, transmitted, and utilized inside machines or in networks across vast distances. The entire system of energy that we rely on must be managed for it to work properly.

Energy Management

The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. The term energy management means many things to many people. One definition of energy management is: "The judicious and effective use of energy to maximize profits (minimize costs) and enhance competitive positions." (Cape Hart, Turner, and Kennedy, Guide to Energy Management Fairmont Press Inc. 1997

Another comprehensive definition is

"The strategy of adjusting and optimizing energy, using systems and procedures to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems."

AUDITING FOR ENERGY MANAGEMENT

1. List ways that you use energy in your college. (Electricity, electric stove, kettle, microwave, LPG, firewood, Petrol, diesel, and others).

A. Electricity, printers, water heater, electric stove, incubator, refrigerator etc.

2. Electricity bill amount for the last year

A.₹19,47,835

3. Amount paid for LPG cylinders for the last year.

A.₹136872

4. Weight of firewood used per month and amount of money spent. Also, mention the amount Spent on petrol/ diesel/ others for generators.

A. We use diesel to run generators which monthly cost around ₹32000.

- 5. Are there any energy-saving methods employed in your college? If yes, please specify. If not, suggest some.
 - · We adjust our day-to-day behaviors
 - · We use energy-efficient appliances
 - We use solar water heaters to reduce heating expenses
 - We use updated ventilation and air conditioning systems
- 6. How much money does your college spend on energy such as electricity, gas, fire wood, etc. in a month?

A.₹212000

- 7. How many CFL bulbs has your college installed? Mention use (Hours used/day for how many days in a month?
- A. We installed 1260 CFL bulbs, they are used 150 hours per month.
- 8. Energy used by each bulb per month. (For example- 60-watt bulb x 4hours x number of bulbs=kwh).

A.2457000Kwh

9. How many LED bulbs are used in your college? Mention the use (Hours used /day for how many days in a month)

A.300 LED bulbs are used for 200 hours a month.

10. What Energy is used by each bulb per month? (Kwh).

A.2250Kwh

- 11. How many in candescent (tungsten) bulbs have your college installed? Mentions use (Hours used /day for how many days in a month)
- A. We stopped using Incandescent Bulbs to save power.
- 12. Energy used by each bulb per month.(Kwh).

A.2250Kwh

- 13. How many fans are installed in your college? Mention use(Hours used/day for how many days in a month)
- A. 850 fans are installed in our college which runs for a duration of 150 hours in a month
- 14. What Energy is used by each fan per month? (kWh)
- A. 9360Kwh
- 15. How many air conditioners are installed in your college? Mention use (Hours used /day, for how many days in a month)
- A. 60 Air Conditioners are used in our college, and they are used for 104 hours a month.
- 16. Energy used by each air conditioner per month. (Kwh).
- A. 1456Kwh energy is used per month.
- 17. How much electrical equipment including weighing balance is installed in your college? Mention the use (Hours used/day for how many days in a month)
- A. There are 60 Electrical equipment in our college which are used for 100 hours in a month.
- 18. Energy used by each electrical equipment per month.(kwh).
- A. 28.66Kwhr
- 19. How many computers are there in your college? Mention the use (Hours used/day for how many days in a month)

There are around 300 computers in our college, which are used for 208 hours in a month

- 20. What Energy is used by each computer per month?(kWh)
- A.7000Kwh energy is used by each computer in a month.
- 21. How many photo copiers are installed by your college? Mention use(Hours used/day for how many days in a month).
- A. There is around 5 photocopier machines in our college which are used for 13 hours a month.

- 22. How many cooling apparatuses are installed in your college? Mention use (Hours used/day for how many days in a month)
- A. There are 10 cooling apparatuses in our college which are used for 30 days in a month.
- 23. Energy used by each cooling apparatus per month? (Kwh) Mention use (Hours used /day for how many days in a month.
- A.180000Kwh energy is used per month.
- 24. Energy used by each photocopier per month? (Kwh) Mention the use (Hours used/day for how many days in a month) how many inverters has your college installed? Mentions use (Hours used/day for how many days in a month)
- A. 3950Kwh energy is used by each photocopier in a month.
- 25. Energy used by each inverter per month?(Kwh)
- A. 2625Kwh energy is used by each inverter per month.
- 26. How much electrical equipment is used in different labs of your college? Mention the use (Hours used/day for how many days in a month)
- A.160 pieces of equipment are used in different labs of our college which are used of 125 hours in a month
- 27. Energy used by each piece of equipment per month? (kwh)
- A. 28.66Kwh energy is used by each piece of equipment in a month
- 28. How many heaters are used in the can teen of your college? Mention the use (Hours used/day for how many days in a month)
- A. Single heater used in the canteen of our college which runs approximately 270 hours in a month.
- 29. Energy used by each heater per month?(kwh)
- A.5400Kwh energy is used by the heater.
- 30. No. of streetlights in your college.
- A. There are around 24 streetlights in our college.
- 31. What Energy is used by each streetlight per month? (kwh)
- A. 24998Kwh energy is used by them in a month

- 32. No. of TV in your college and hostels?
- A. There is a TV in the hostel.
- 33. What Energy is used by each TV per month? (kwh)

A. 6200Kwh energy is used by TV in a month

34. Any other item that uses energy (Please write the energy used per month) Mention the use (Hours used/ day for how many days in a month)

A.NO

35. Are any alternative energy sources/nonconventional energy sources employed/installed in your college? (photo voltaic cells for solar energy, wind mill, energy-efficient stoves, etc.,) Specify.

A.YES

36. Do you run "switch off" drills at college?

A.Yes, we conduct switch-off drills at college on 14th December every year.

37. Are your computers and other equipment put in power-saving mode?

A.YES

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

A.YES 720Hrs.

- 39. What are the energy conservation methods adopted by your college?
 - We adjust our day-to-day behaviors
 - We use energy-efficient appliances
 - We use solar water heaters to reduce heating expenses
 - We use updated ventilation and air conditioning systems
 - Energy conservation awareness programs
- 40. How many boards are displayed for saving energy awareness?

A. 30 boards are displayed in various departments of our college to bring awareness to the conservation of energy

- 41. How much ash is collected after burning fire wood per day in the canteen?
- A. Firewood is not used in our canteen.

METHODS TO CONSERVE ENERGY

- 1.Unplug electronics when not in use
- 2.Switch to LED and CFL bulbs to save energy
- 3. Hang clothes to dry instead of using dryers
- 4.Use solar Inverters rather than normal ones

Spreading Awareness on saving Energy



ENERGY SAVING SLOGANS

- Save Energy, Save assets of future
- Energy is life, so conserve it
- Rock your world by saving energy

Energy management

S.No		Tubes/ bulbs	AC;s	LCD projectors	LED	printers	Computers	Solar Power	Energy management
1	Arabic	1	V	1	V	V	1	X	1
2	Biotechnology	V	1	V	V	V	1	X	√
3	Botany	1	1	1	1	V	V	X	V
4	Chemistry	1	1	1	1	V	V	X	√
5	Commerce	1	1	1	1	V	V	X	1
6	Computer Science	1	1	1	1	1	V	X	V
7	Economics	1	1	1	X	1	1	X	V
8	English	√	1	1	1	1	1	X	V
9	French	1 1	1	1	X	1	1	X	V
10	Genetics	1 1	1	1	1	1	1	X	1
11	Geography	1 1	1	1	1	1	1	X	V
12	Hindi	1	V	V	1	1	1	X	
13	History	√	V	1	1	1	1	X	√
14	Marketing	1	1	1	X	1	1	X	1
15	Mathematics	1	1	V	1	1	1	X	V
16	MBA	1	1	1	X	1	1	X	V
17	MCA	1	1	V	1	1	1	X	V
18	Microbiology	1	1	1	1	1	1	X	V
19	Persian	1	1	1	X	1	1	X	V
20	Philosophy	V	1	1	1	1	1	X	1
21	Physical education	1	1	1	1	1	1	X	V
22	Physics	1	1	1	1	1	1	X	1
23	Political science	1	1	1	1	1	1	X	1
24	Psychology	1	1	1	1	1	1	X	1
25	Public administration	1	1	1	1	1	1	X	1
26	Sanskrit	1	1	1	1	1	1	X	V
27	Sociology	1	1	1	1	1	1	X	1
28	Statistics	√	1	1	1	1	1	X	1
29	Telugu	√	1	1	1	1	1	X	1
30	Urdu	√	1	1	1	1	1	X	1
31	Zoology	1	1	1	1	1	1	X	1
32	Hostels	1	X	1	1	1	1	proposed	V

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SUGGESTIONS

- Install LED Lighting
- Install LED Bulbs
- Install smart controls with sensors and automation
- Heat and cool campus buildings properly
- Conserve water on campus
- Conducting workshops on energy management
- Invited lectures from resource persons on energy management
- Awareness programs by the NSS unit of the college
- Help your buildings run smarter together

