Nutan Urja Solutions

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Date: 11/08/2024

CERTIFICATE

This is to certify that we have conducted Green Audit at D Y Patil International University Akurdi, Pune for the year 2023–24.

The Uniersity has already adopted **Green** practices like:

- Installation of Rain Water Harvesting system
- Installation of Sewage Treatment Plant.
- Installation of **350 kW** Roof Top Solar PV Power Plant.
- Usage of Energy Efficient LED
- Usage of Energy Efficient BEE STAR Rated equipment

We appreciate the support of Management, involvement of faculty members and students in the process of making the campus Green.

Nutan Urja Solutions,

K G Bhatwadekar,
Certified Energy Auditor,
EA - 22428

Report

On

Green Audit

At

D. Y. Patil International University

Akurdi,Pune

(Year 2023-24)

D Y PATIL
INTERNATIONAL
UNIVERSITY
AKURDI PUNE

Prepared by

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Acknowledgement

We at Nutan Urja Solutions, Pune, express our sincere gratitude to the management D. Y. Patil International University, Akurdi, Pune for awarding us the assignment of Green Audit of their university premises.

We hope that the recommendations stated in this report will be useful and worthy of discussions to take things forward to help implementation of energy conservation measures and green practices. While we have made every attempt to adhere to high quality standards, in both data collection and analysis through the report, we would welcome your suggestions so as to improve upon this report further.

Executive Summary

Green Audit of D. Y. Patil International University Akurdi, Pune is conducted by Nutan Urja Solutions, Pune. Based On the audit field study, following important points can be presented.

1. Present Energy Consumption

D. Y. Patil International University Akurdi, Pune uses Electrical Energy as the source of Energy for various equipment in the university campus. In the following Table, we present the details of Energy Consumption.

Table no 1: Details of energy consumption

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	69,103	55.28
2	Minimum	-	-
3	Average	40,270	32.22
4	Total	4,83,241	386.59

2. Various Measures Adopted for Energy Conservation

1. Usage of STAR Rated ACs at new installations
2. Usage of LED lights at some indoor locations
3. Usage of LED Lights for outdoor lighting.

3. Usage of Renewable Energy

The institute has installed **350 kW** Solar PV Power Plant.

4. Rain Water Harvesting

The university has installed the Rainwater harvesting project, to reduce dependency on municipal corporation water supply.

5. Waste Management

The internal communication is through emails and E waste generated in university is disposed time to time through proper vendors.

6. Notes and Assumptions

1. Daily working hours-10 Nos

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2. Annual working Days-250 Nos
3. Average Rate of Electrical Energy : **Rs 11/- per kWh**

Abbreviations

CFL	:	Compact Fluorescent Lamp
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
V	:	Voltage
I	:	Current
kW	:	Kilo- Watt
kWh	:	kilo-Watt Hour
kVA	:	Active Power

1. Introduction

D. Y. Patil International University, Akurdi, Pune (DYPIU) has recently become operational as a State Private University and has rolled out with a fundamental mission of covering a remarkable milestone in the history of Higher Education in India. It further aims to convert itself into a Private University of global value by developing socially relevant and contemporary outcome-based programs, carrying out inter and intra disciplinary research in thrust areas, enhancing the scope of collaborations for research, and boosting faculty and student exchange programs worldwide. Also, by its acute focus on empowerment through Education and Academic Excellence, it aspires to provide an inspirational and experiential learning environment for its stakeholders and is also keenly responsive towards serving the prerequisites of the Industry and society by embedding internationalization, employability and value ruminating in all its programs.

1.1 Objectives

1. To study present level of Energy Consumption
2. To Study the present CO_2 emissions
3. To assess the various equipment/facilities from Energy efficiency aspect
4. To measure various Electrical parameters
5. To study Scope for usage of Renewable Energy
6. To study various measures to reduce the Energy Consumption

1.2 Audit methodology

1. Study of connected load
2. Study of various Electrical parameters
3. To prepare the Report with various Encon measures with payback analysis

2. Study of Electrical Energy Consumption

In this chapter, electricity bills are studied for the analysis of electrical energy consumption. The D. Y. Patil International University Akurdi, Pune is situated in Padmashree D. Y. Patil Educational Complex. Entire Padmashree D. Y. Patil Educational Complex is having single energy meter for all institutes situated in complex. The bill analysis is carried for electricity bills of entire campus.

Table no 2.1: Summary of electricity bills

No	Month	Energy (kWh)	Bill Amount (Rs)
1	Jun-24	-	3,07,440
2	May-24	44,035	25,72,781
3	Apr-24	69,103	13,22,065
4	Mar-24	49,745	9,73,997
5	Feb-24	44,372	8,95,288
6	Jan-24	40,320	8,31,398
7	Dec-23	35,398	7,68,080
8	Nov-23	43,545	8,80,689
9	Oct-23	51,310	9,41,977
10	Sep-23	39,228	7,72,778
11	Aug-23	37,536	7,39,307
12	Jul-23	28,649	6,17,114
	Total	**4,83,241**	**1,16,22,914**

Variation in energy consumption is as follows,

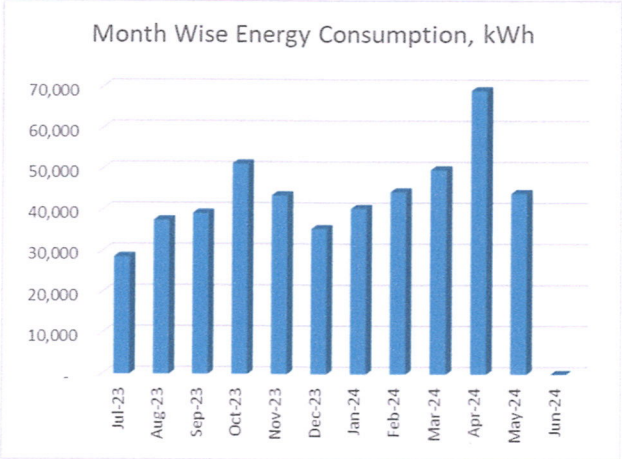

Figure 2.1: Month wise energy consumption

Monthly variation in electricity bill is as follows,

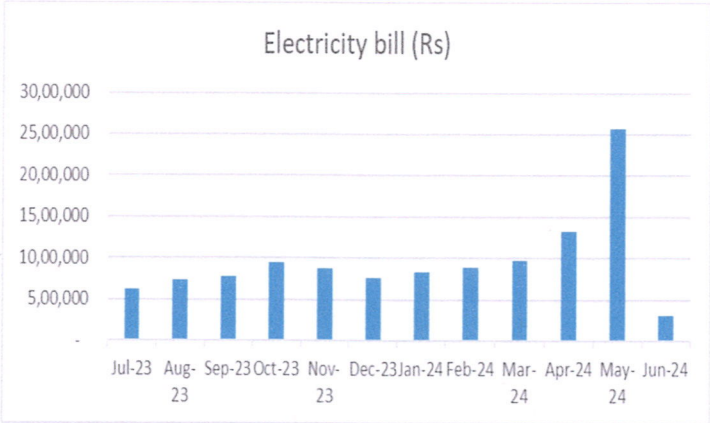

Figure 2.2: Month wise electricity bill

Key observations of electricity bill are as follows,

Table no 2.2: Key observations

Sr no	Parameter	Energy consumed, (Units)	CO2 Emission (MT)
1	Maximum	69,103	55.28
2	Minimum	-	-
3	Average	40,270	32.22
4	Total	4,83,241	386.59

3. Carbon Foot printing

1. A Carbon Foot print is defined as the Total Greenhouse Gas emissions (CO_2 emissions), emitted due to various activities. In this we compute the emissions of Carbon-Di-Oxide, by usage of the various form of Electrical Energy used by the university for performing its day to day activities

2. Basis for computation of CO_2 Emissions:

The basis of Calculation for CO_2 emissions due to Electrical Energy is as under

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere.

Based on the above Data we compute the CO_2 emissions which are being released in to the atmosphere by the university due to its Day to Day operations.

The D. Y. Patil International University Akurdi, Pune is situated in Padmashree D. Y. Patil Educational Complex. Entire Educational Complex is having single energy meter for all institutes situated in complex. Calculation for CO_2 emissions due to Electrical Energy is carried for entire campus.

We herewith furnish the details of various forms of Energy consumption as under

Table 3.1: Month wise Consumption of Electrical Energy & CO2 Emissions

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jun-24	-	0.00
2	May-24	44,035	35.23
3	Apr-24	69,103	55.28
4	Mar-24	49,745	39.80
5	Feb-24	44,372	35.50
6	Jan-24	40,320	32.26
7	Dec-23	35,398	28.32
8	Nov-23	43,545	34.84
9	Oct-23	51,310	41.05
10	Sep-23	39,228	31.38
11	Aug-23	37,536	30.03
12	Jul-23	28,649	22.92
	Total	**4,83,241**	**386.59**

In the following Chart we present the CO2 emissions due to usage of Electrical Energy.

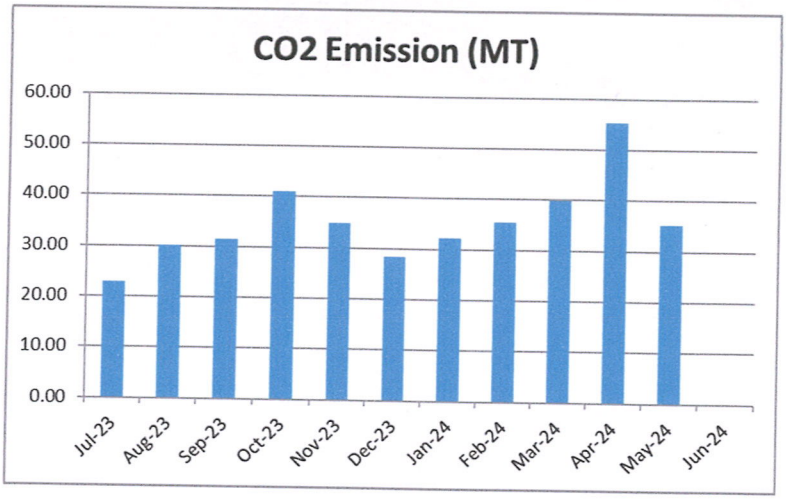

Figure 3.1: Month wise CO2 Emission

5. Study of Water System

5.1 Source of Water

university gets water from Pimpiri- Chinchwad Municipal Corporation. The RO treated water is provided for drinking.

5.2 Rain Water Harvesting

The university has already installed Rain Water Harvesting project, wherein the rain water falling on the terrace is collected and through pipes it is fed to underground Water Storage tank. This stored water is then reused for domestic purpose.

Photograph of Rain Water Harvesting

5.3 Sewage Treatment Plant

The waste water generated in university campus is treated in Sewage Water Treatment Plant. This plant aims to remove contaminants from sewage to produce an effluent that is suitable for reuse application. The sewage water treatment plant is operating with 350 KLD water capacity.

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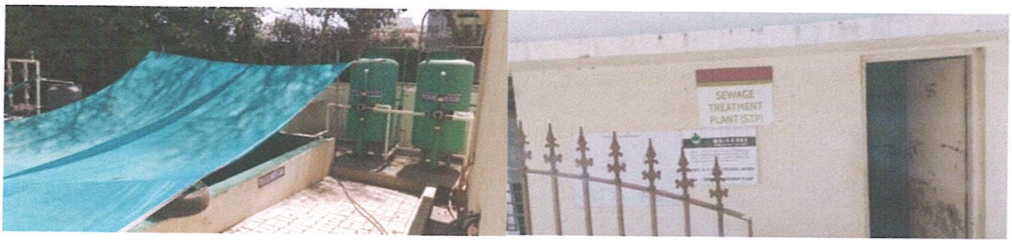
Photograph of Sewage Treatment Plant



6. Study of Waste Management

6.1 Solid Waste Management

The garbage collected in university is segregated into wet and dry centrally in campus. Waste bins are placed in university campus for collection of waste.

6.2 e-Waste Management

The E- waste generated in university is disposed time to time though authorized vendor

6.3 Waste Water Management

The waste water generated in university campus is treated in Sewage Water Treatment Plant. The sewage water treatment plant is operating with 250 KLD water capacity.

7. Study of Green Practices

7.1 No of students who don't use own Vehicle for coming to Institute

Student hostels are located near campus only. Many students live in hostel campus. Many of the Out of total students coming to Institute, about 60% students use own Automobile. During the lockdown of Covid 19 negligible vehicles are reported on the campus during the year 2019-20 and 2020-21. Online teaching mode used for the teaching learning processes.

7.2 Usage of Public Transport

Padmashree D. Y. Patil Educational Complex campus can be conveniently reachable by public transport. Most of the staff is using own vehicles i.e cars and two wheelers. The capacity of parking is enough to accommodate all vehicles. During the Students transport study, it was revealed that the local students who are residing near areas make use of Public Transport like Municipal Transport local buses, local sharing type auto rickshaws. Institute encourages students to not to use automobiles.

7.3 Pedestrian Friendly Roads

The Institute has well defined pedestrian foot paths as to facilitate the easy movement of the students within the campus.

Photograph of Road within campus

7.4 Plastic Free Campus

The Institute is an active participant in the Government of India's most prestigious project of SWATCHH BHART ABHIYAN. The Institute has displayed boards in the Campus, to make the campus plastic free. Various measures adopted for this purpose are as follows

- Installation of Separate waste bins for Dry waste & wet waste
- Usage of paper tea cups in the Institute canteen

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- Display of boards in the campus for Plastic Free campus

7.5 Paperless Office

The internal communication of the Institute is through the Internet. There are hardly any day to day operations, where printing is required.

7.6 Food Service in institute campus

There are canteens and cafeterias within institute campus. Students need not to travel outside the institute for food. Canteen contractor have Food license and shop act certificate. Hygiene in canteen is well maintained.

7.7 Provision of Ramp for Divyangajan

The university has made provision of ramp for Divyangajan

7.8 Provision of Sanitary Waste Incinerator

The university has installed Sanitary Waste Incinerator to dispose of the sanitary waste.

7.9 Creation of Aareness about Resource Conservation

The university has displayed Posters on Importance of energy conservation and water conservation.

7.10. Green Landscaping with Trees and Plants

The Institute has beautiful maintained Garden.

Figure 7.1: Beautiful maintained Garden of university