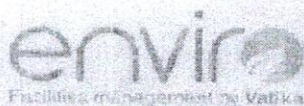


ENERGY AUDIT REPORT IIHMR



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ENVIRO INTEGRATED FACILITY
SERVICES PRIVATE LIMITED

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The IIHMR University
1, Prabhu Dayal Marg
Near Sanganer Airport, Jaipur-302029

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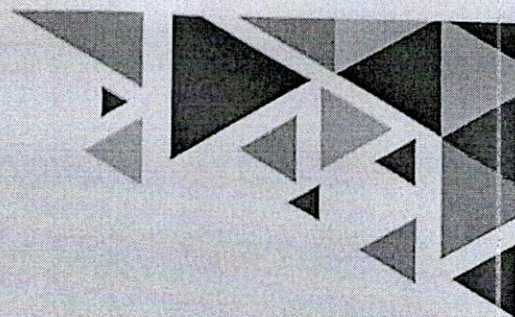
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CERTIFICATE

PRESENTED TO

IIHMR UNIVERSITY

1, Prabhu Dayal Marg, Near Sanganer Airport, Jaipur - 302029

Has been assessed by Enviro Integrated Facility Management Company for the comprehensive study of Energy Audit on institutional working framework to fulfill the requirement of

ENERGY AUDIT

ACADEMIC YEAR 2022-23

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

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

For ENVIRO INTEGRATED
FACILITY SERVICES PVT. LTD.

(Authorised Signatory)

SIGNATURE

24-03-2023

DATE OF AUDIT

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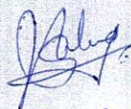
The IIHMR University

Enviro Integrated Facility Services Pvt Ltd, 5th Floor, Tower A, 1, Prabhu Dayal Marg
Vatika City Centre, Sec 83, Vatika India Next. Gurugram - 122012
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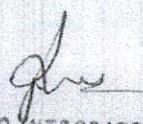
www.enviroindia.in | clientservicecell@enviroindia.in

ENVIRO QUALITY POLICY

Enviro is fully committed to provide world class management of commercial building, Townships, manufacturing plants and residential complex, to enhance productivity and Quality of life by use of the latest technology in the facilities and services dedicated team work and continual improvement.

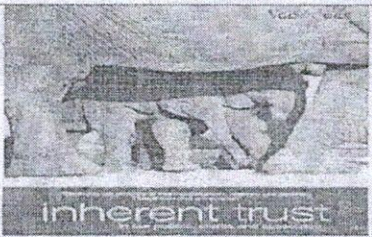
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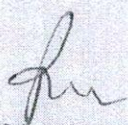
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Enviro Value Chart:

Value	Context	Symbol	Meaning
Power of Commitment	To our client and associates		A penguin is a symbol of everlasting commitment dedication.
Integrity	In character, thoughts and action		A lion is a symbol of integrity on the basis of good character, honest outlook and behavior instinct.
Quality	In thoughts and action		A horse is the projection of strength power beauty and has ability to perform everything wit perfection.
Inherent Trust	In our people clients and associates		Elephants are symbol of might and memory, harmony and patience overall trust and compassion.


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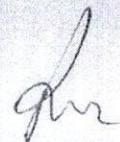
ACKNOWLEDGEMENT

We take the opportunity to express our deep sense of gratitude towards Management, Institute of Health Management Prabhu Dayal Marg, Sanganer Airport, Jaipur Research for awarding the work of executing Energy Audit in IIHMR, Jaipur. In particular we wish to thank him for his timely initiative, advice and valuable support extended to the team.

We are also grateful for extending all sorts of help while carrying out energy audit and also for their valuable help regarding the data collection and details at various stages of the project. We are also thankful to them for providing support while conducting survey at IIHMR, Jaipur.

We would be failing in our duty if we do not thank our respondents who gave their valuable time and answered the survey questions with tremendous patience and understanding.

ENERGY AUDIT TEAM, EIFS Pvt.Ltd.



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DISCLAIMER

This Energy audit report of IIHMR, Jaipur is prepared by Enviro Excellence Team on interest of the organization.

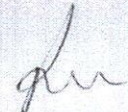
This report need not necessarily represent the views of building management and its employees. The building management, any employee of IIHMR, Jaipur nor any person acting on behalf of any of them makes no warranty or representation whatsoever express or implied with respect to use of any information, process, method or similar item disclosed in this report and assumes no legal liability for the information in this report, nor does any party represent that the use of this information will not infringe upon privately owned rights.

All calculations in this report are done based on the data provided by building administration, the necessary measurements taken during the study, and the operating conditions prevailing during the study period. The accuracy of the report is subject to these limitations.

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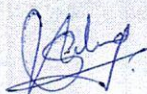
EXECUTIVE SUMMARY

Brief Description of Audit Location

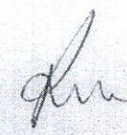
IIHMR, Jaipur is the most prominent institute in India for Hospital & Health Management with two more institute branches at Delhi and Bangalore. IIHMR Jaipur is located in Jaipur near Sanganer Airport with an area of 15 Acres. The infrastructure includes three Hostels, one residential complex and a guest house. Jaipur Discom (JWNL) provides the power supply to these buildings. The facility has a sanctioned load of 950 KW and Contract Demand of 900 KVA. Power comes through a Single Pole located outside the IIHMR premises. The substation receives supply at 11 kV, which is stepped Down through transformer of 500 kVA rating to 440 V. Two DG sets meet the contingencies, one DG Set of 250 KVA and other DG sets of 125 KVA.

Connected Load Profile

1. Sanction Load/contract demand - 900 KVA
2. Transformer Ratings –
500 KVA, Voltas make
Current HT/LT -26.24/666.7 Amp. , Voltage 11KV/440 V, 50 Hz,
Oil cap. 520 liters, Date of manuf. 29.1.88
3. System back up Power
250 KVA Cummins make with canopy
125 KVA, Greaves make DG set (Dismantal)
Engine Type: 6R1080TA, Engine No. / Sr.No. 6H.2516/0300186
HP/RPM - 156/1500 /1/ 1
4. Energy Meter
Main Meter (HT Side) (Net. HT TVM)
Sr.No, X8462868, make Secure, class = 0.5
Meter CTR = -/5, Meter PTR = 11 KV/110V, Meter constant = 160 pulse/KWh
CTPT set of CTR = 50/5 Amp. , PTR = 11 KV/110 V
Over all MF (Multiplying Factor) = 10 (TEN) for all
5. Power Factor improvement equipment
(i) APFC - not available / manual operation
(ii) Capacitor ratings - 100 KVAR (25KVAR x 4)
(iii) Installed at LT side



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EXECUTIVE SUMMARY

The Energy audit team of EIFS was entrusted with the task of conducting energy audit of IIHMR, Jaipur. The purpose of this energy audit was to establish a benchmark to be considered for future changes in the building to improve energy efficiency.

The JVVNL expenses on energy during the last (April '22– Feb '23) at this facility are as follows:

Electricity Expense: **Total: Rs. 8,338,674.52/-**

The goal of EIFS is to establish baseline energy usage profiles and recommended Energy conservation measures (ECMs) in order to understand the buildings over all potential and cost associated with energy and cost reduction improvements.

3.1 BACKGROUND

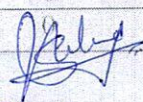
The study covers the detailed analysis of the existing energy usage pattern of one year (April '22– Feb '23) & DG data for (April '22– Feb '23) of the Building and identification of areas where both energy & monetary savings can be achieved by employing suitable economically viable measures.

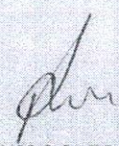
This report covers the energy audit study for the entire building complex including common facility management systems. The study was carried out based on various data provided by building management staff.

OBSERVATION

- The Energy Consumption in 2022 is increased to 379765 Units as comparison to 2021.
- The Solar Energy Generation in 2022 is decreased to 97903 Units in comparison to 2021.
- The Capacitor Bank are Operational in Manual Mode.
- There is no Power Factor Incentive due to Poor Power Factor. The details as :-

Sr No.	Month	Power Factor	Power Factor Incentive
1	Sep-22	0.949	0
2	Oct-22	0.939	0
3	Nov-22	0.941	0
4	Dec-22	0.945	0
5	Feb-23	0.937	0


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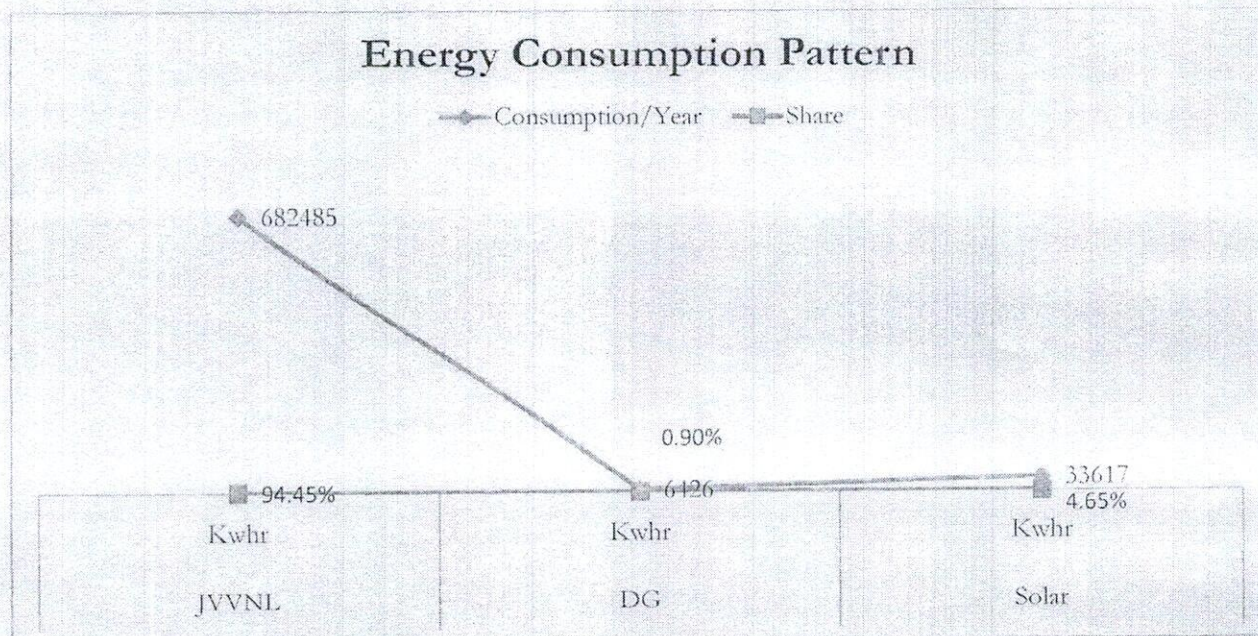

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Energy Consumption Pattern

Lighting, pump/motor load, Air Conditioners, Exhaust Fans are the major energy consuming components in the building, followed by diesel (very less consumption) used in DG sets.

The building utilizes various energy resources to provide best of the amenities in the management, break up of different resources is given below and this consumption of resources forms the baseline/ benchmarking of the energy use.

Sr No.	Source	Units	Consumption/Year	Share
1	JVVNL	Kwhr	682485	94.45%
2	DG	Kwhr	6426	0.90%
3	Solar	Kwhr	33617	4.65%



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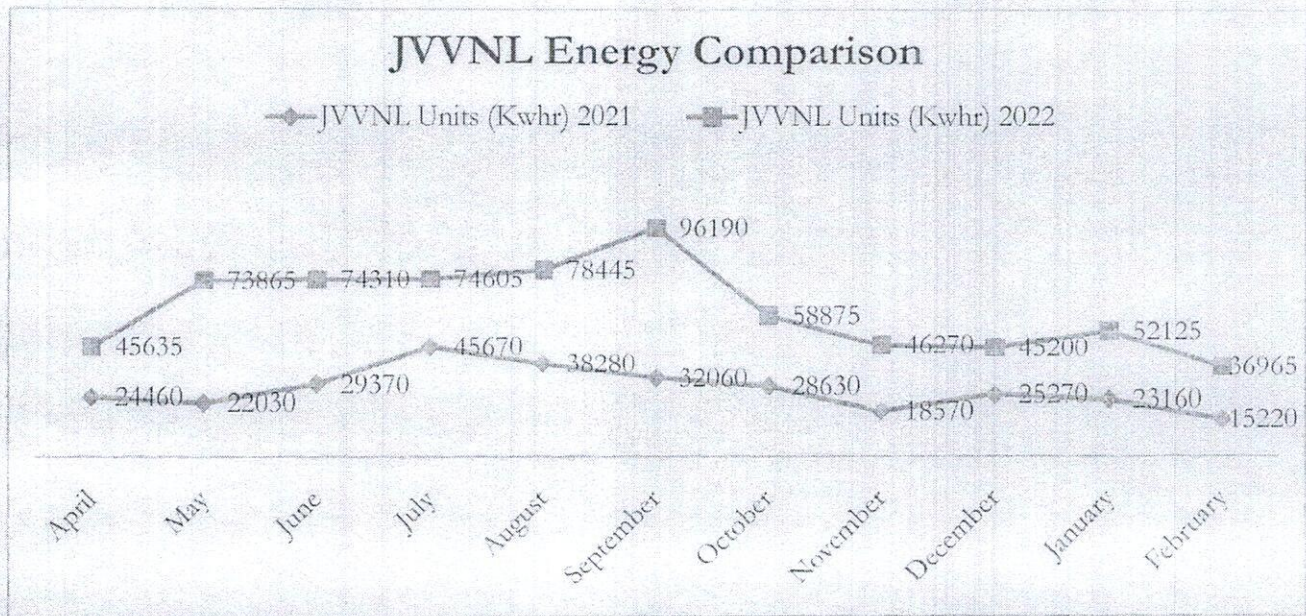
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Energy Consumption Analysis 2021 Vs 2022

Sr No.	Month	JVVNL Units (Kwhr) 2021	JVVNL Units (Kwhr) 2022
1	April	24460	45635
2	May	22030	73865
3	June	29370	74310
4	July	45670	74605
5	August	38280	78445
6	September	32060	96190
7	October	28630	58875
8	November	18570	46270
9	December	25270	45200
10	January	23160	52125
11	February	15220	36965
Total Energy Consumption		302720	682485



Note: - In Comparison to 2021 the Energy Consumption Increased to 379765 Kwhr in 2022. There is increase of the 125% in comparison to last year.

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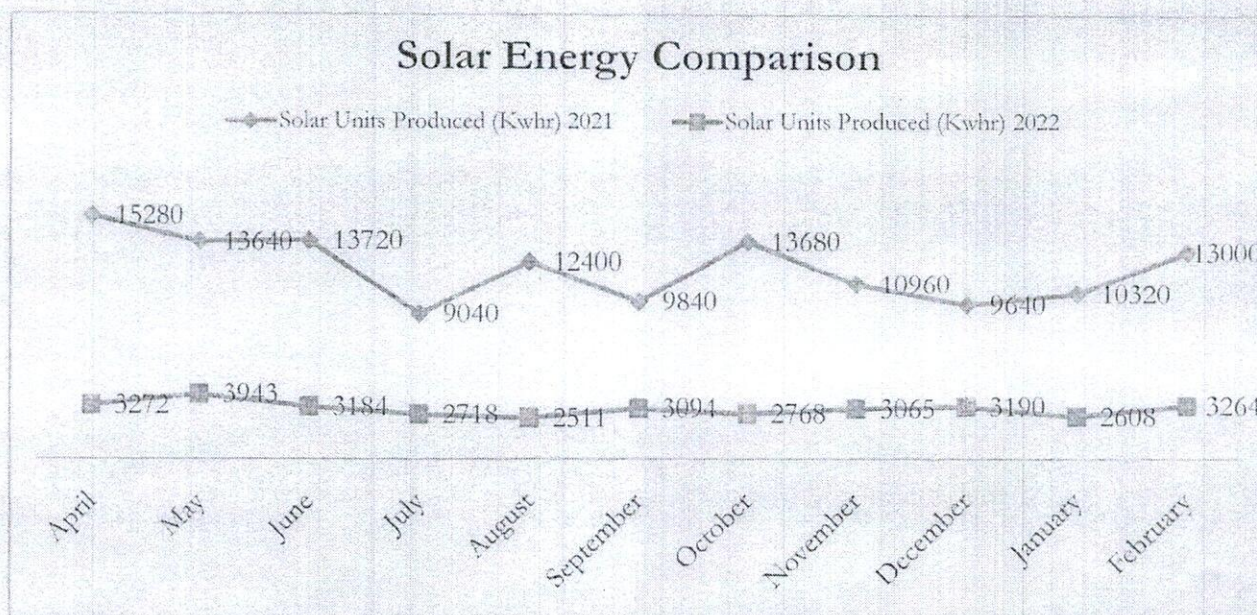
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Solar Energy Analysis 2021 Vs 2022

Sr No.	Month	Solar Units Produced (Kwhr) 2021	Solar Units Produced (Kwhr) 2022
1	April	15280	3272
2	May	13640	3943
3	June	13720	3184
4	July	9040	2718
5	August	12400	2511
6	September	9840	3094
7	October	13680	2768
8	November	10960	3065
9	December	9640	3190
10	January	10320	2608
11	February	13000	3264
	Total Energy Consumption	131520	33617

Solar Energy Comparison



Note: - In Comparison to 2021 the Energy Consumption decreased to 97903 Kwhr in 2022. There is decrease of the 74.43% in comparison to last year.

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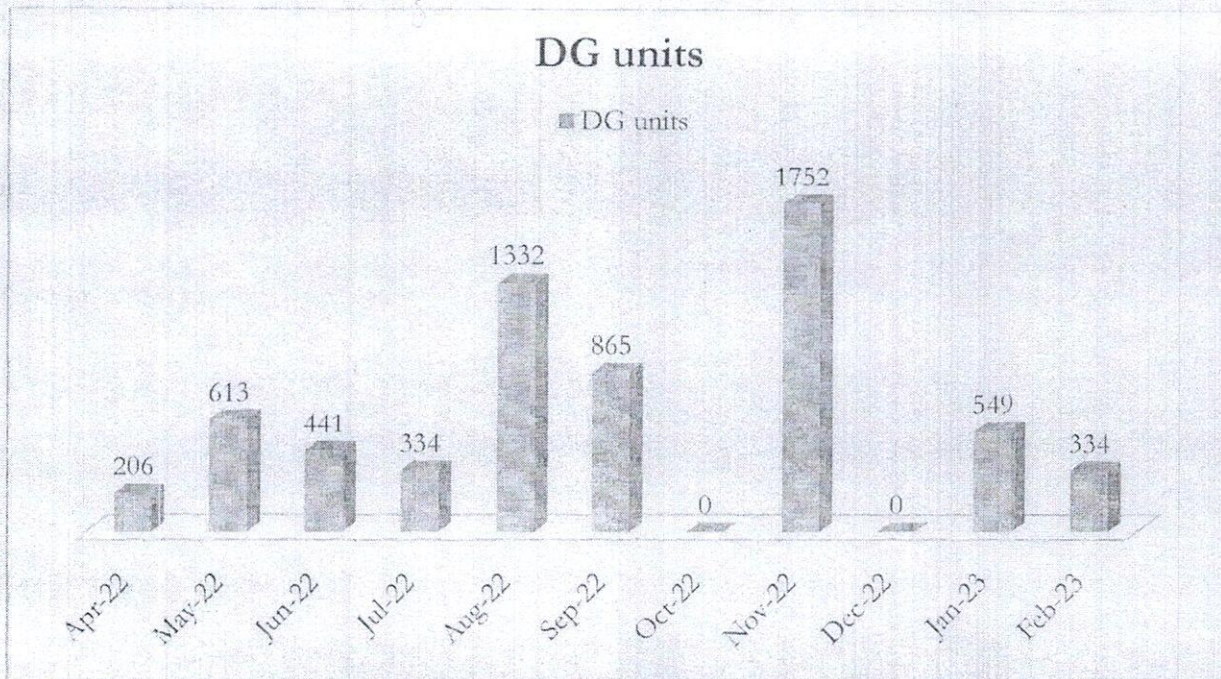
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DG Energy Analysis 2021 Vs 2022

Sr No.	Month	DG units
1	Apr-22	206
2	May-22	613
3	Jun-22	441
4	Jul-22	334
5	Aug-22	1332
6	Sep-22	865
7	Oct-22	0
8	Nov-22	1752
9	Dec-22	0
10	Jan-23	549
11	Feb-23	334
Total Energy Consumption		6426



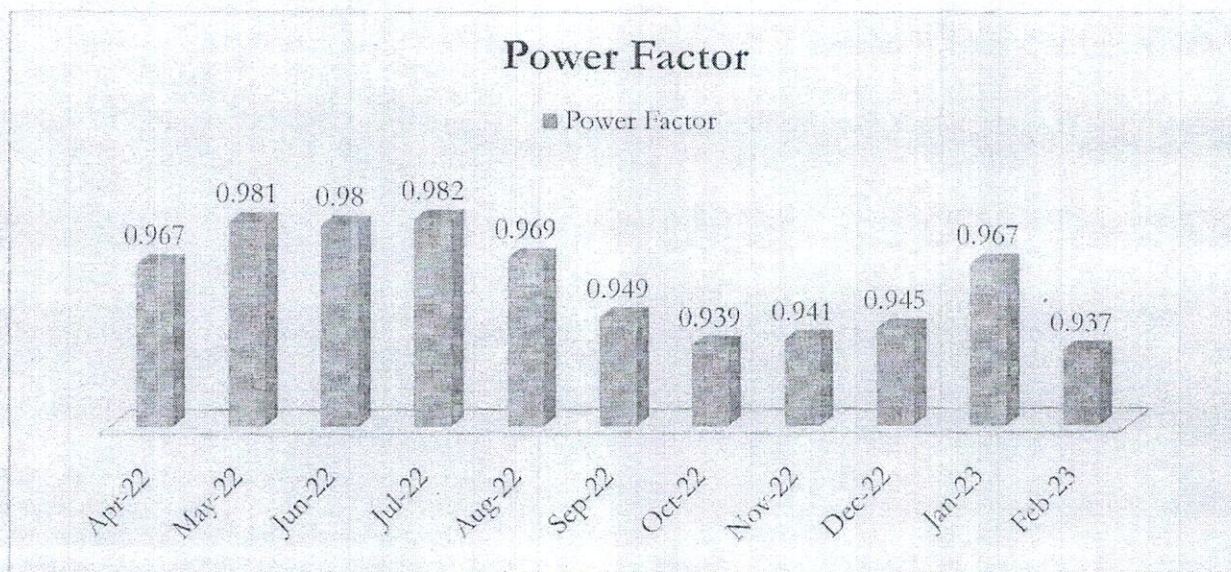
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Power Factor and Power Factor Incentive 2022

Sr No.	Month	Power Factor	Power Factor Incentive
1	Apr-22	0.967	3432.69
2	May-22	0.981	13727.81
3	Jun-22	0.98	13152.87
4	Jul-22	0.982	14525.59
5	Aug-22	0.969	6595.26
6	Sep-22	0.949	0
7	Oct-22	0.939	0
8	Nov-22	0.941	0
9	Dec-22	0.945	0
10	Jan-23	0.967	3921.1
11	Feb-23	0.937	0

Note: - After Analysis the Power factor it was observed that if the Power factor is below 0.95 there is no Power Incentive given in the Electricity Invoice.



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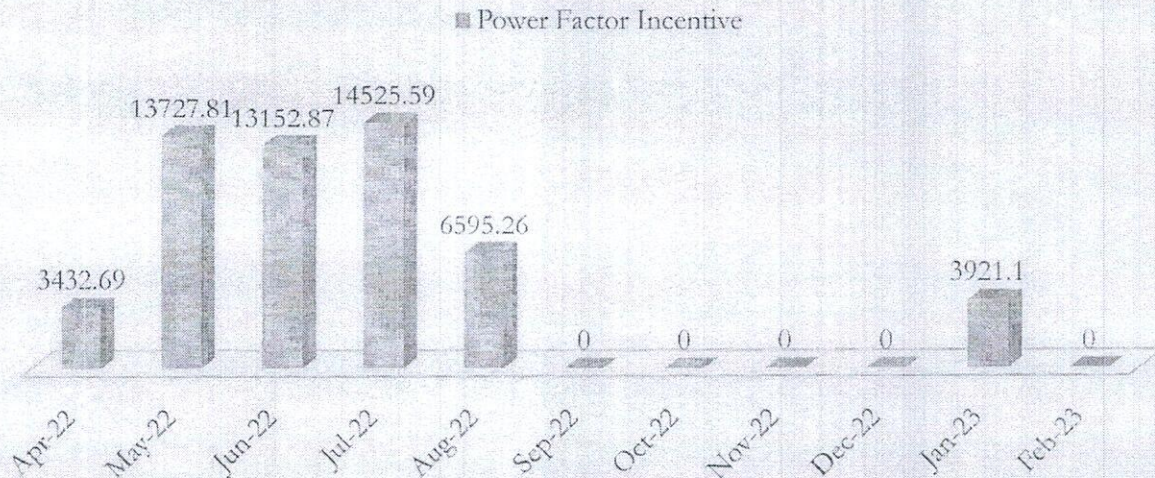
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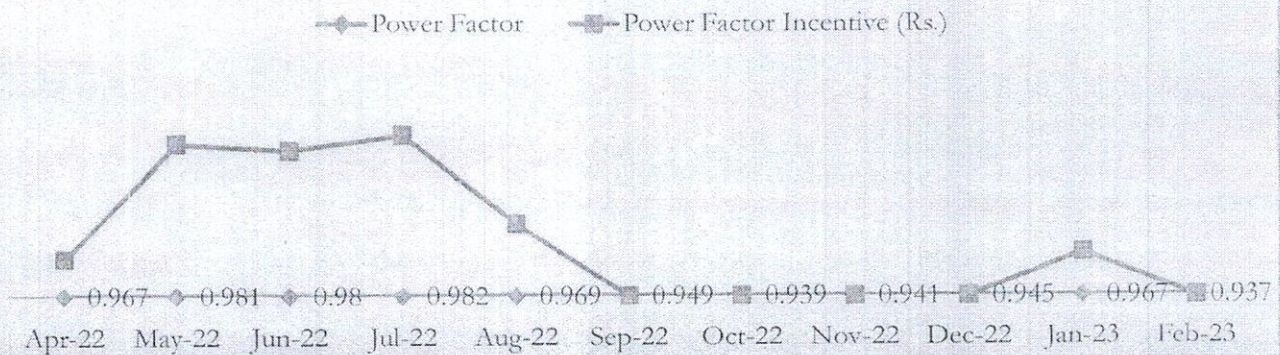
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Power Factor Incentive



Power Factor Vs Power Factor Incentive



Note: - It was observed that if the Power Factor is less than 0.95 then the Power Incentive was not given by the JVVNL.

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Energy and Monetary Savings Initiative

1. The Installation of Automatic Power Factor Correction (APFC).

- The Power Factor is maintained manually by switching the capacitors as per the Load requirement.

The Power Factor & Power Factor Incentive for last Eleven months:-

Sr No.	Month	Power Factor	Power Factor Incentive (Rs.)
1	Apr-22	0.967	3432.69
2	May-22	0.981	13727.81
3	Jun-22	0.98	13152.87
4	Jul-22	0.982	14525.59
5	Aug-22	0.969	6595.26
6	Sep-22	0.949	0
7	Oct-22	0.939	0
8	Nov-22	0.941	0
9	Dec-22	0.945	0
10	Jan-23	0.967	3921.1
11	Feb-23	0.937	0
Average Power Factor		0.960	Rs.55355.32

- The available capacitor ratings are 25KVARx04=100 KVAR

Recommendation: - APFC Panel should be installed for automatic maintenance of the Power Factor.

Cost Benefit Analysis

As per the Power Factor Analysis during the period (April '22– Feb '23) Power Factor Incentive is Rs.55355.32 if we maintain Power factor 0.999 the Power Factor Incentive is Rs.165000/-there is saving of Rs.110000/-

Approximate Cost of APFC Panel:-Rs1,60,000/-

Simple Pay Back Period APFC Panel is 1.5 Year



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2. The Timer should be installed in the Street Lights.
3. All the old Air Conditioner should be replaced with 5 Star Inverter AC that will save 7-8 % Energy.
4. Convert all the Tube lights with led.
5. All the Exhaust Should be operational through Cyclic Timer.

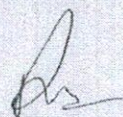


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