



7.1.6 A2 Quality Audit - Energy audit

ENERGY AUDIT CERTIFICATE

This is to certify that Energy Audit has been successfully completed by M/s. Saur Engineers & Consultants Pvt. Ltd. Empanelled Energy Auditor(CLASS-A) MEDA, Government of Maharashtra and an ISO 14001:2015 company and suggestions for improvements have been given. The Audit activity has been executed for beneficiary with following Details:-

Nirmala College of Commerce
Municipal School Bldg, Rani sati Marg, Malad, Mumbai 400097

Date of Audit: 15/04/2024
Assessment Period: 2023-2024 Valid till: 14/04/2026



ANUP A. SAMANT
TECHNICAL DIRECTOR



ASHUTOSH V. THAKUR
MANAGING DIRECTOR

Saur Engineers & Consultants Pvt. Ltd.

Registration No: EA-28 MEDA/ECN/2023-24/Class-A/EA 28

Empanelled Energy Auditor-CLASS A, MEDA, Government of Maharashtra

The report is generated from data, information, answer to asked questions, standards and procedures defined by different and concerned authorities time to time, available site condition, weather condition, operational and availability conditions provided by beneficiary on the day of survey. If any changes on above said measures on any other parameters affecting these measures may lead to change, alter, in-corrections even falsifying calculations, results, recommendations and suggestions. The values, figures, amounts mentioned are indicative to the site situation and condition; it may not reflect each and every aspect of it. The report is generated restricted to given scope and available conditions and measures.




I/c Principal
Dr. Umeshchandra Yadav



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1. Introduction

1.1. Energy Audit


Energy Audit is a Basic essential activity to be done for saving in electrical billing and also allied with any energy saving projects like renewable energy project and solar projects. Energy Audit is an assessment of usage, consumption and pattern of energy used in the premises based on all above parameters along with conditions and benchmarks as resource and Building Envelope Analysis, working, operational and Maintenance Procedure Analysis, Utility Data Analysis, Load Data Analysis, Analysis of Energy Consumption, Load Evaluation, consumption pattern and billing history, back-up systems and also the administrative requirements, assessment of safety concerns, assessment of operating and occupancy schedules for Equipment, Power Quality and Environmental Parameters Analysis, Efficiency and Wastage Analysis and assessment of potential risk factors.

Energy Audit is a process of systematic identification, quantification, recording, reporting and analysis of energy usage properties of institute. It aims to analyze within and surrounding the place concerned, which will see interrelation with eco-friendly atmosphere. Energy audit is a valuable means for an Institution related to educational area to determine how and where they are connected with Energy conservation drive of nation. Understanding these conditions the institution can make plans for day to day working, future expansions as well as an eco-friendly view of life while making changes and planning for savings. It provides better understanding of impact of energy consumption on working conditions to staff and visitors. As the Energy availability is becoming an increasingly important issue for the nation, the role of higher education institute is more vital and prevalent in relation with the issue.

The rapid urbanization and economic development at local, regional and global level has led to Energy availability and quality crisis. On this background it becomes essential to adopt the system of Energy efficient and safe Campus for the institution which leads for sustainable development and at the same time persisting the quality of the same while travelling on the growth path. Moreover, it is social responsibility of a High energy consuming institution to ensure that they contribute towards the saving of Energy and thus making it available who are destitute in term of energy availability.

Energy, Electrical & safety Audits | Solar and Electric Consultation | Power Management by IOT
Solar Rooftop EPC | New Electric Connections| Meters (New, Shifting, additional)
Load Management | Electrical Installation & Maintenance| Permissions, approvals, liasoning
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1.4. Objective

The Energy audit of an institution has becoming the paramount important for self-assessment of the Institution which reflects in the role of the institution in mitigation to current problem of reducing Energy availability and quality. The institution has been putting efforts to keep reducing and standardizing energy usage since its inception. Therefore the purpose of present Energy audit is to identification, quantification, recording, reporting and analysis of components of Energy utilization and electrical safety properties of institute framework of energy conservation in compliance with the applicable regulations, policies and standards. The main objectives to carrying out the energy audit are:-

- To have overview of premises
- To record and document Utility data
- To record and document Load profile data
- To record and document basic Electrical Safety observations data
- To record and document Energy Conservations (if any)

The green audit of an institution has becoming the paramount important for self-assessment of the Institution which reflects in the role of the institution in mitigation to current problem of reducing greenery and natural resources depletion. The institution has been putting efforts to keep clean and green atmosphere since its inception. Therefore the purpose of present green audit is to identification, quantification, recording, reporting and analysis of components of natural diversity properties of institute framework of Green atmosphere sustainability. The main objectives to carrying out the green audit are:-

- To record and document Air quality data
- To record and document Water quality data
- To record and document Weather/Meteorology data
- To record and document Noise Level data
- To record and document Tree Diversity data
- To record and document Faunal diversity data

The Environmental audit of an institution has becoming the paramount important for self-assessment of the Institution which reflects in the role of the institution in mitigation to current problem of reducing greenery and natural resources depletion. The institution has been putting efforts to keep clean and green atmosphere since its inception. Therefore the purpose of present Environmental audit is to identification, quantification, recording, reporting and analysis of components of surrounding environmental properties of institute framework as a part of global environment sustainability. The main objectives to carrying out the Environmental audit are:-

- To record and document Wastage type and management
- To record and document Recycling Procedures
- To record and document Impact on environment
- To record and document Carbon footprints

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1.5. Methodology

The purpose of Energy Audit of is to ensure that the practices followed in the campus are in accordance with the Energy Conservation Policy of the Country. The methodology includes: collection of data, physical inspection of the campus, observation and review of the documentation and data analysis.

The report is based on the documents obtained while on site, visual inspection and data collection carried out during the assessment period. All the measurements recorded on site are indicative loads and duties. All readings are collected for analysis and improvement planning. Cost estimates are indicative only as more detailed design and acceptance of suggestions will be required to improve the accuracy of these estimates.

The units are selected from SI (international standards) with meters, Celsius degrees, Etc.

1.6. Audit Statement

The building is adopting the "Energy Efficient Campus" system for Energy conservation and sustainability. There are main three pillars i.e. Energy saving by technology and Operation & Maintenance procedures, safe working on occupational health and performance and 100% inmates demonstrating energy efficiency literacy. The goal is to maintain safe working environment, reduce energy consumption, while creating an atmosphere where inmates can work and live healthy.

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10. Energy Audit

9.1 Electrical Energy System

SL No	CA No	Meter No	Sanctioned Load	DISCOM	Phase
1	101420992	4919670	1.36	AECL	Single
2	101424003	8798700	1.36	AECL	Single
3	101424013	10023004	1.36	AECL	Single
4	101424024	10023565	1.36	AECL	Single

9.2 Electrical Bill Analysis

Meter	101420992	
Month	22-23	23-24
January	226	162
February	142	177
March	451	118
April	394	112
May	320	118
June	437	266
July	545	199
August	620	206
September	295	147
October	432	292
November	436	109
December	473	158

Meter	101424003	
Month	22-23	23-24
January	190	210
February	216	160
March	263	176
April	186	94
May	180	15
June	202	114
July	158	254
August	139	290
September	132	222
October	91	345
November	137	180
December	139	183

Meter	101424013	
Month	22-23	23-24
January	100	222
February	192	244
March	203	145
April	104	86
May	80	41
June	177	236
July	278	324
August	301	298
September	202	181
October	109	276
November	165	141
December	181	175

Meter	101424024	
Month	22-23	23-24
January	324	533
February	767	565
March	435	1268
April	693	1093
May	504	1494
June	521	1209
July	466	693
August	584	617
September	327	665
October	335	1310
November	453	613
December	443	515

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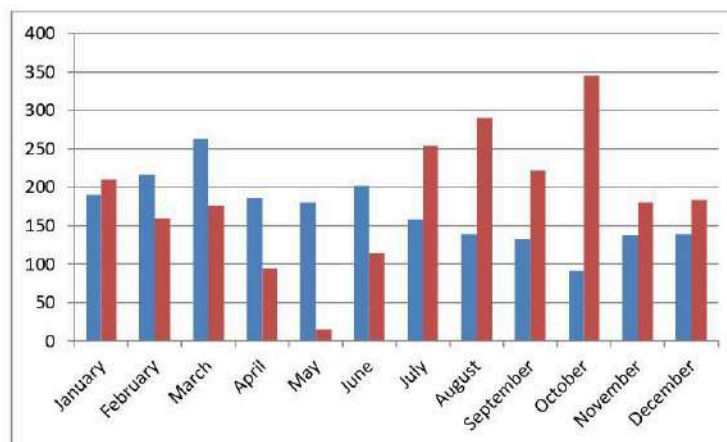
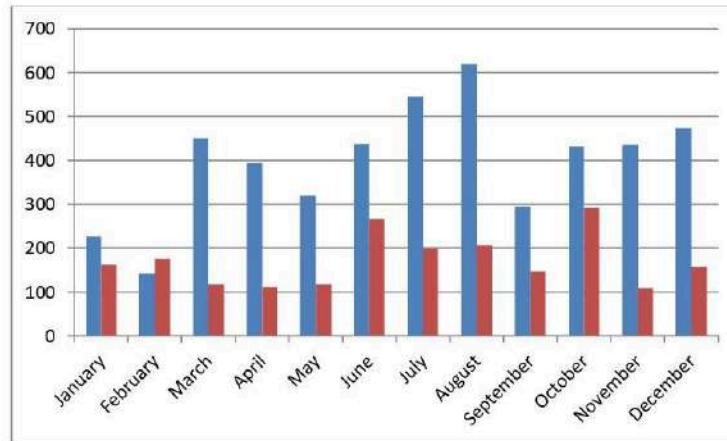


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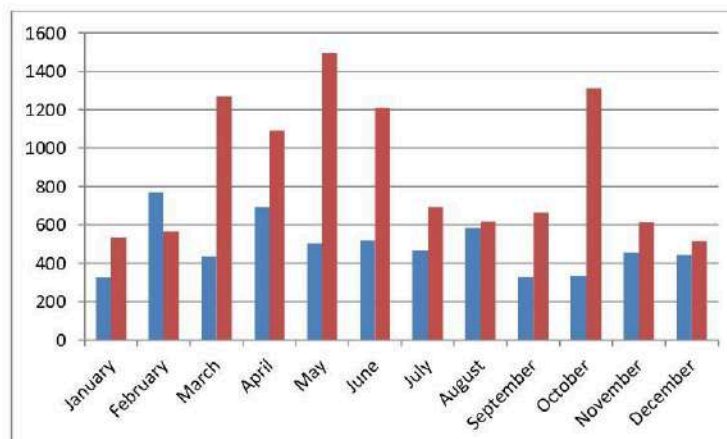
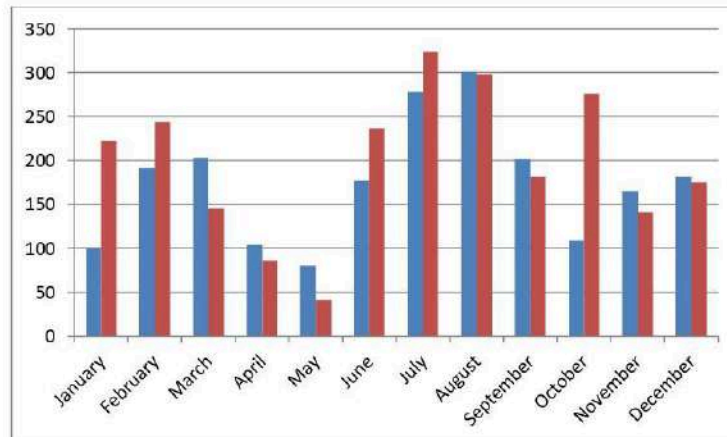


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9.3 Consumption Scenario

Meter	101424013		Meter	101424024	
Year	22-23	23-24	Month	22-23	23-24
Total	2092	2369	Total	5852	10575
Consumption Growth	11.69		Consumption Growth	44.66	

Meter	101420992		Meter	101424003	
Month	22-23	23-24	Month	22-23	23-24
Total	4771	2064	Total	2033	2243
Consumption Growth	-131.15		Consumption Growth	9.36	

Year	22-23	23-24
Total	14748	17251
Consumption Growth	14.51	

It is found that Total consumption is increased by 14.5%; which is not negligible. Meter-1 and Meter-4 have found moderate increase but Meter-2 has drastic increase. Meter-3 has decreased the consumption.

It is recommended that

1. All the connected loads in each room has to be listed down
2. All rooms working time has to be noted down.
3. Any extra activity such as program/function/gathering, Etc. has to be recorded in terms of connected load, extra load, running time.
4. Extra consumption in particular month and reason for the same.
5. Manual and remote monitoring of consumption.

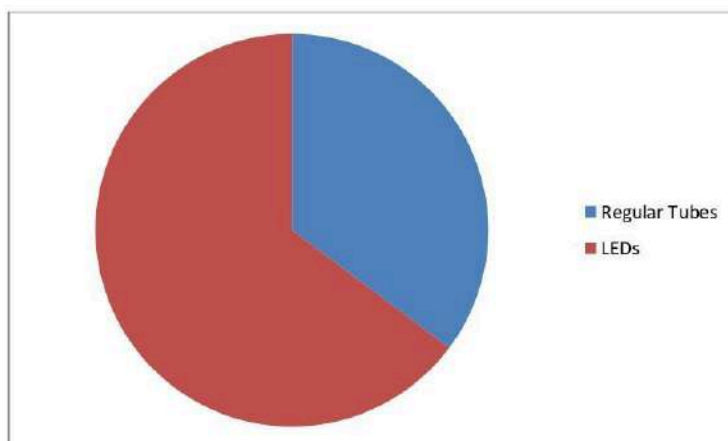


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9.4 Assessment of Lighting System

Lights	Regular Tubes	LEDs
Nos	50	92
Load(Kw)	2.0	1.84
Percentage	52.08	47.92



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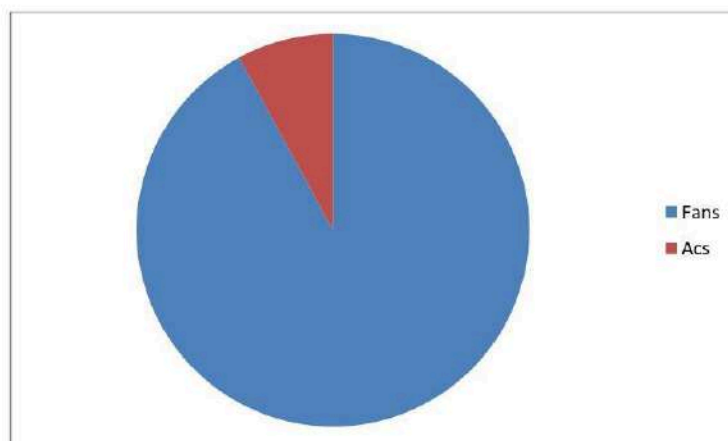


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9.5 Assessment of Cooling System

Cooling	Fans	Acs
Numbers	93	8
Load(Kw)	6.98	8
Percentage	46.58	53.42



9.6 Use of Renewable Energy System

Not Available

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11. Safety Assessment

11.1. Status of presence of electrical safety hazards:

SL No	Safety Hazard Yes/No Remarks	Yes/No	Remarks
1)	Existence of non ISI/standardized appliances	No	
2)	Whether the existing wiring is more than 20 years old. (Wiring more than 20 years old must be recommended for replacement)	No	
3)	Whether Fire detection and Alarm system is installed?	NA	
4)	Whether sufficient number of fire extinguishers is installed?	Yes	
5)	Segregated UPS room with proper ventilation/exhaust is provided?	NA	
6)	Is their display of emergency telephone number of nearest fire station, hospital and key person?	Yes	
7)	Whether frequent sparking at certain place(s) reported	No	
8)	Whether switches found with burnt marks	No	
9)	Existence of non standardized tube lights/CFLs/Bulbs and TL starters and chokes	No	
10)	Dampness in walls and ceiling	No	
11)	Loose switches/plugs	No	
12)	Naked wiring or connections	No	
13)	All Electrical cables/wiring are in conduits and are protected by a fire proof insulation	Yes	
14)	Seepage /Leakage of water in walls or on and around electrical installations	No	
15)	Whether connection to each AC is provided through an individual MCB of appropriate rating & of standard make and ISI approved.	Yes	
16)	Whether there are frequent tripping due to overloads ?	No	



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11.2 Safety Survey:

- 10.1.1 Actual Cable Size (at meter): 35 Sqmm
- 10.1.2 Year of Installation: 2018
- 10.1.3 Actual Available Cut-out Size: 100A
- 10.1.4 Year of Installation: 2018
- 10.1.5 Actual Required ELCB Size: Present at Branches
- 10.1.6 Meter Cabin Condition: Average
- 10.1.7 Availability of Fire extinguisher/ Sand Buckets: **No (In Meter cabin)**
- 10.1.8 Water proofing/Seepage: No
- 10.1.9 Damages/Tampering: No
- 10.1.10 Adequacy in connections/Termination/Joints: Good
- 10.1.11 Ease of accessibility: Good
- 10.1.12 Danger Signs: **Yes**
- 10.1.13 Smoke detectors : Good
- 10.1.14 Alarm system: Yes
- 10.1.15 Emergency Entry/Exit door: Yes
- 10.1.16 Emergency evacuation plan: **NO**
- 10.1.17 Fire extinguishers: Yes
- 10.1.18 Public Address system : YES
- 10.1.19 Rodent arrester: **NO**
- 10.1.20 CCTV: Yes
- 10.1.21 Meter cabin: Average Condition
 - 10.1.21.1 Leakage: **NO**
 - 10.1.21.2 Damaged/tempered/cracks: **NO**
 - 10.1.21.3 Name plate: **No**
 - 10.1.21.4 Water logging possibility: **No**
- 10.1.22 Physical Inspection of Power source : Average Condition
 - 10.1.22.1 Adequacy as per standards **OK**
 - 10.1.22.2 Rusting of panel **OK**
 - 10.1.22.3 Visible scaling **OK**
 - 10.1.22.4 Scaled/ Unclean wires breakers **OK**
 - 10.1.22.5 Wet / Dampness **NO**

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11.3 Following Regulations have been breached by electric connections present

1. Regulation 16: Separate Earthing

Not provided

2. Regulation 27: Generation station Fire Bucket with clean Dry sand

No

Additional Fire Extinguisher nearby

No

Training of staff

No

3. Regulation 41: Earth Resistance

No

Record of Registered value

No

