
INTERNATIONAL INSTITUTE OF BUSINESS STUDIES



IIBS

International Institute of Business Studies, Bengaluru

ENERGY AUDIT REPORT 2021

Audit conducted on 21st May 2022

Report Submitted on 29th May 2022

Energy Auditing Committee:

- 1. T Gopi, Gomatha Electricals, Authorized By the Government of Karnataka.**
- 2. Dr Tripuraneni Jaggaiah, Principal, IIBS**
- 3. Ashok Matcha, Assistant Professor, IIBS**


Principal
International Institute of Business Studies
75, Muthugadahalli, Jala Hobli,
Bangalore North - 562 157.



Gomatha Electricals

Class I. Govt. Licenced Electrical Contractors

No. 37, 2nd Main, 2nd Cross, BSK 3rd Stage, Bangalore - 560 085

Ref. :

Energy Audit Certificate

The purpose of the May 2022 Energy Audit conducted for the International Institute of Business Studies (IIBS), specifically at the IIBS Airport Campus in Bengaluru, was to evaluate various energy consumption and efficiency-related factors for the academic year 2021-2022. The primary goals of the audit were to assess energy costs, evaluate the availability and dependability of energy supply, and investigate energy conservation technologies to reduce overall energy consumption.

During the audit, a thorough evaluation of the energy consumption at the IIBS Airport Campus was conducted, including the collection of pertinent data on electricity and other energy sources used on the premises.

The energy audit's findings and recommendations were compiled into a comprehensive report. This report detailed energy consumption patterns, identified areas for energy savings, and suggested specific measures and technologies to achieve energy efficiency and cost reduction objectives. The report served as a valuable resource for IIBS administration to make educated decisions regarding energy conservation initiatives and investments.

The Energy Audit conducted in 21st May 2022 at the IIBS Airport Campus in Bengaluru provided a comprehensive evaluation of energy costs, availability, supply reliability, and proposed energy conservation technologies to reduce energy consumption. The campus can achieve greater energy efficiency, cost savings, and environmental sustainability by implementing the recommendations.

Place: Bengaluru

Date: 29th May 2022

External Auditor

T. Gopi,

(Gomatha Electricals)

Internal Auditors:

Dr Tripuraneni Jaggaiah, Principal
International Institute of Business Studies
Jaggalahalli, Muthugadahalli, Jala Hobli,
Bangalore North - 562 157.

Ashok Matcha,
Coordinator.

GOMATHA ELECTRICALS

Govt. Licenced Class-1
Electrical Contractor

No.37, 2nd Main, 2nd Cross
BSK 3rd Stage, Bangalore - 560 085.
Mob : 94499 03970



Executive Summary

Energy prices have recently emerged as a major factor in determining product costs across all scales, from the individual to the national. Like other production factors like capital, land, and labor, the price of energy has a major impact on the economy. Given the urgency of resolving energy shortages, it is crucial to adopt energy conservation practices, which entail using less energy to achieve the same results.

Energy Audits work toward this goal by comparing the amount of energy used to the amount of energy that was put in. They help pinpoint the origins of all energy used by a system and measure how much power each individual process requires. An energy audit can help you save money by identifying ways to reduce energy usage, reduce emissions, increase security, and enhance maintenance procedures. In addition, they are pivotal in regulating energy prices, ensuring a steady flow of energy, determining the best mix of energy sources, and implementing cutting-edge methods of energy conservation.

Energy Audits allow for better judgement because they take a methodical approach to energy management. They take a holistic view of a building's energy consumption, cataloguing its various energy sources and rating their efficiency in performing individual tasks. This in-depth study points in the right direction with regards to lowering energy costs, instituting preventative maintenance practices, and guaranteeing quality control in production and utility operations. The price, availability, and dependability of energy sources can all be tracked with the help of an efficient auditing programme. It's useful for picking the right energy mix, finding the best energy-saving technologies, and updating old appliances to use less power. The primary goal of an Energy Audit is to find ways to lessen the amount of energy needed to produce a given amount of output or to cut down on operational expenses.

This document details the findings of an Energy Audit performed at the IIBS Airport location.

Introduction:

Energy audit is a systematic process that involves the analysis and assessment of energy usage and efficiency in a facility or organization. It aims to identify areas of energy wastage and recommend measures to optimize energy consumption, reduce costs, and enhance overall energy efficiency. In India, energy audits play a crucial role in addressing the country's energy challenges, promoting sustainability, and achieving energy conservation targets.

Energy audits in India are conducted across various sectors, including industrial, commercial, and residential buildings, to evaluate energy consumption patterns, identify energy-saving opportunities, and suggest cost-effective solutions. The audits encompass a comprehensive examination of energy-consuming systems, equipment, processes, and practices to identify areas of improvement.

Energy Efficiency Agency in India:

In India, the primary agency responsible for energy efficiency and promoting energy audits is the Bureau of Energy Efficiency (BEE). BEE is a statutory body under the Ministry of Power, Government of India. It was established in 2002 with the goal of promoting energy conservation and efficiency across various sectors of the Indian economy.

The key objectives of the Bureau of Energy Efficiency include:


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International Institute of Business Studies
75, Muthugadahalli, Jala Hobli,
Bangalore North - 562 157.

identifying potential energy-saving opportunities, and formulating effective energy efficiency strategies.

The questionnaire will provide a clear picture of the electronic equipment landscape within the campus, enabling the audit team to focus on specific areas where energy consumption can be optimized. This information will serve as a basis for further investigation, analysis, and recommendations to improve energy efficiency and reduce energy costs.

By understanding the quantity of electronic equipment and their energy usage patterns, the audit team can provide valuable insights and recommendations to the campus management on how to enhance energy efficiency, reduce energy wastage, and create a more sustainable and cost-effective environment.

Overall, the preliminary questionnaire is an important tool in the energy audit process, as it enables the identification and evaluation of electronic equipment present in the campus, forming the basis for further analysis and energy efficiency improvements.

The Questionnaire is as follows

1. What is the quantity of AC units in the facility?
2. How many fans are present in the facility?
3. How many 2*2 lights are installed in the facility?
4. How many round lights are installed in the facility?
5. How many LED tube lights are present in the facility?
6. What is the quantity of small LED lights?
7. How many CCTV cameras are installed in the facility?
8. What is the quantity of systems on standby mode?
9. How many systems are actively used in the facility?
10. How many printers are present in the facility?
11. What is the quantity of telephones in the facility?
12. How many scanners are installed in the facility?
13. What is the quantity of projectors in the facility?
14. How many Xerox machines are present in the facility?
15. How many heaters are installed in the facility?
16. What is the quantity of water filters?
17. How many note counters are present in the facility?
18. How many refrigerators are installed in the facility?
19. How many induction cooktops are present in the facility?
20. What is the quantity of speakers?
21. How many 50W lights are installed in the facility?
22. How many smart screens are present in the facility?
23. What is the quantity of lifts in the facility?
24. How many Sewage Treatment Plants (STPs) are installed in the facility?
25. Please provide the respective quantities for each item listed.

Data collected:

Electrocnic Item	Quantity
AC	28


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Fans	228
Lights 2*2	154
Lights Round	441
Tube lights	276
Small LED Lights	18
CCTV	86
System standby	135
System	135
Monitors	135
Printer	25
Telephone	19
Scanner	1
Projector	31
Xerox	3
Heater	1
Water filters	4
Note counter	1
Refrigerator	3
Induction	1
Speaker	16
Smart Screen	1
STP	1
Inverter	1
Borewells	2


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Power consumption per item:

Electrocnic Item	Quantit y	power consumption per item	total Consumption kWh
AC	28	2000	56000
Fans	228	55	12540
Lights 2*2	154	40	6160
Lights Round	441	20	8820
Tube lights	276	20	5520
Small LED Lights	18	9	162
CCTV	86	7	602
System standby	135	60	8100
System	135	150	20250
Printer	25	40	1000
Telephone	19	4.5	85.5
Scanner	1	4.5	4.5
Projector	31	500	15500
Xerox	3	320	960
Heater	1	1200	1200
Water filters	4	230	920
Note counter	1	90	90
Refrigerator	3	230	690
Induction	1	1600	1600
Speaker	16	100	1600
Smart Screen	1	1200	1200

Sustainable Energy at the Campus


1.	List few ways that you use energy in your institute. (Electricity, LPG, firewood, others). Using this list, try to think of ways that you could use less energy every day.	Electricity is saved by use of LED bulbs for illumination, LPG is saved by use of Pressure cookers for cooking food. Alternate source of energy i.e. Solar lights are Installed.
2.	Are there any energy saving methods employed in your institute? If yes, please specify. If no, suggest some	Yes, Renewable source of energy through solar lights. Use of Natural Lights and Natural Ventilation are promoted.

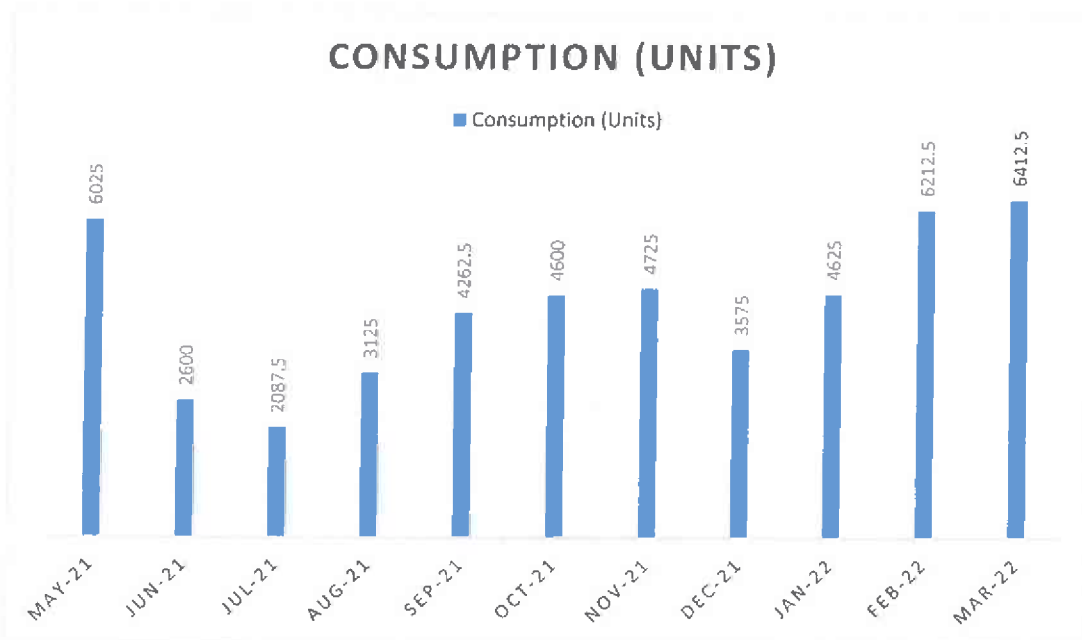

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3.	How many CFL/LED bulbs has your institute installed?	100% of Total Conventional bulbs are replaced by LED Lights.
4.	Are any alternative energy sources employed / installed in your institute? (Photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.) Specify.	Yes, photovoltaic cells for solar energy
5.	Do you run "switch off" drills at institute?	Yes
6.	Are your computers and other equipment's put-on power-saving mode?	Yes, In Practice
7.	Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?	Yes; AC on stand-by Almost all the hours except when direly needed.

Table showed the power consumption details of last year


Month	Consumption (Units)
May-21	6025
June-21	2600
July-21	2087.5
Aug-21	3125
Sept-21	4262.5
Oct-21	4600
Nov-21	4725
Dec-21	3575
Jan-2022	4625
Feb-22	6212.5
Mar-22	6412.5
Apr-22	7937.5
Total Consumption	52,500

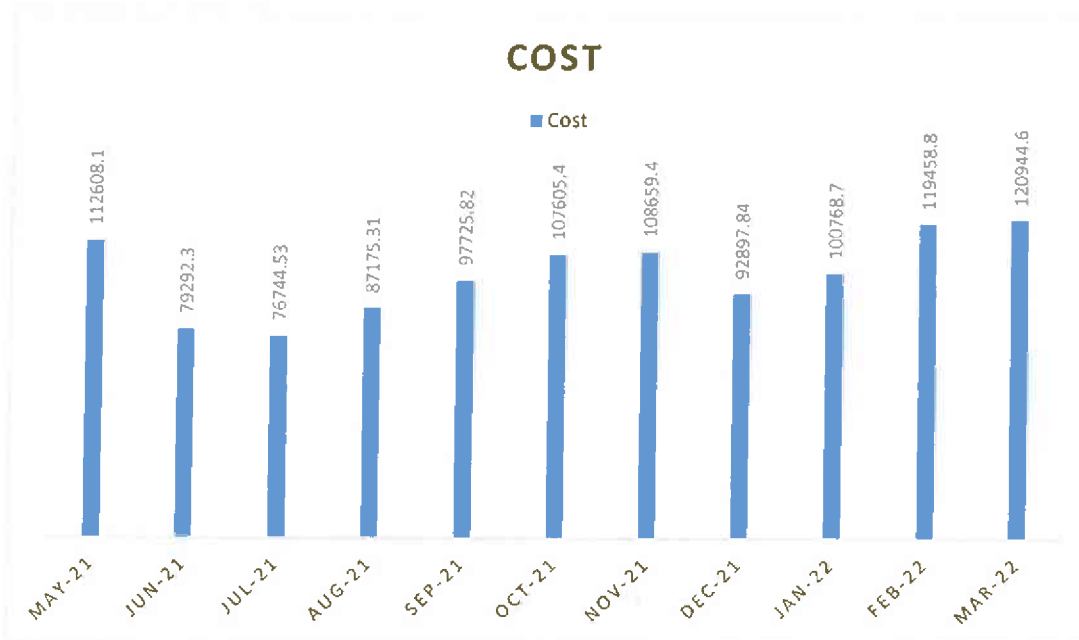

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Total Cost incurred

Month	Cost
May-21	112608.1
June-21	79292.3
July-21	76744.53
Aug-21	87175.31
Sept-21	97725.82
Oct-21	107605.4
Nov-21	108659.4
Dec-21	92897.84
Jan-2022	100768.7
Feb-22	119458.8
Mar-22	120944.6
Apr-22	136298.9
Total Consumption	1,314,029.17


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Areas of Improvement in the campus:

Adoption of Solar Energy:

With **52,500** units of electricity consumption and annual spend of **1,314,029.17** adoption of solar energy is recommended as an essential step towards a sustainable and cost-effective future. Solar energy offers numerous benefits, including environmental sustainability, energy independence, and significant cost savings. By harnessing the power of the sun through rooftop solar installations, facilities can reduce their carbon footprint and combat climate change. Solar energy is a renewable resource, abundantly available, and produces no greenhouse gas emissions during electricity generation. The adoption of solar energy also provides a degree of energy independence, reducing reliance on grid-supplied electricity and mitigating the impact of power outages. Moreover, solar power offers long-term cost savings by reducing electricity bills and providing a hedge against rising energy prices. With advancements in technology and supportive government incentives, now is the opportune time to embrace solar energy and contribute to a cleaner, greener, and more sustainable future.

Advantages of Establishment of solar electricity:

1. Size of Power Plant	
Feasible Plant size as per your Budget :	26kW
2. Cost of the Plant :	
MNRE current Benchmark Cost (without GST) :	Rs. 38236 Rs. / kW
View Benchmark Cost List	


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 Bangalore North - 562 157.

Without subsidy (Based on current MNRE benchmark without GST) :	Rs. 994136 (near to your budget)
With subsidy 0 (Based on current MNRE benchmark without GST) :	Rs. 994136
3. Total Electricity Generation from Solar Plant :	
Annual :	39000kWh
Life-Time (25 years):	975000kWh
4) Financial Savings :	
a) Tariff @ Rs.6/ kWh (for top slab of traffic) - No increase assumed over 25 years :	
Monthly :	Rs. 19500
Annually :	Rs. 234000
Life-Time (25 years) :	Rs. 5850000

Carbon dioxide emissions mitigated is	800 tonnes.
This installation will be equivalent to planting	1279 Teak trees over the life time. (Data from IISc)


Replacement of LCD monitors with LED:

Replacement of LCD monitors with LED (Light Emitting Diode) monitors is suggested as a smart and energy-efficient choice. LED monitors offer several advantages over LCD monitors, making them a worthwhile investment.

Firstly, LED monitors consume significantly less energy than LCD monitors. LEDs are known for their energy efficiency, as they require less power to operate, resulting in lower electricity consumption. By replacing LCD monitors with LED alternatives, organizations can reduce their energy usage and contribute to overall energy conservation efforts.

Secondly, LED monitors provide enhanced visual quality and improved brightness compared to LCD monitors. LED technology allows for better contrast ratios, sharper images, and more vibrant colors, providing a superior viewing experience. This can be particularly beneficial for tasks that require accurate color representation or high-definition visuals.

Furthermore, LED monitors have a longer lifespan compared to LCD monitors. LEDs are known for their durability and longevity, resulting in reduced maintenance and replacement costs over time. By adopting LED monitors, organizations can enjoy prolonged usage before needing to replace or upgrade their display devices.


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In terms of environmental impact, LED monitors are also considered more eco-friendly. They do not contain harmful substances such as mercury, which is commonly found in the fluorescent backlights used in LCD monitors. Additionally, LED monitors generate less heat during operation, contributing to a cooler and more comfortable working environment.

Considering the energy efficiency, improved visual quality, longer lifespan, and reduced environmental impact, the replacement of LCD monitors with LED monitors is a smart choice. It not only brings cost savings through reduced energy consumption and maintenance but also supports sustainability efforts by reducing carbon emissions.


Usage of AC:

ACs not being used with proper recommendations can lead to increased power consumption during summers. Here's an elaboration on the factors contributing to this issue:

- **Doors not properly closed:** When doors are left open or not closed tightly, cool air from the AC escapes the room, and warm air from outside enters. This results in inefficient cooling as the AC has to work harder to maintain the desired temperature. As a result, more energy is consumed to compensate for the loss of cooled air.
- **Curtains not used:** Curtains or blinds serve as a barrier to sunlight entering through windows. When sunlight enters a room, it heats up the space, causing the AC to work harder to maintain a comfortable temperature. By not using curtains or blinds to block direct sunlight, the cooling load on the AC increases, leading to higher energy consumption.
- **Lack of insulation:** Insulation plays a crucial role in maintaining the coolness inside a room. Poor insulation allows heat to penetrate the room, forcing the AC to continuously cool the space to counteract the heat gain. This constant cooling requirement significantly raises energy consumption.
- **Inadequate sealing of windows and gaps:** If windows and gaps are not properly sealed, warm air from outside can infiltrate the room, while cool air from the AC escapes. This reduces the effectiveness of the AC's cooling capacity and leads to wastage of energy.

To address these issues and reduce power consumption, the following recommendations can be implemented:

- **Educate occupants:** Raise awareness among building occupants about the importance of closing doors and windows properly to prevent cooled air from escaping and warm air from entering.
- **Promote the use of curtains and blinds:** Encourage the use of curtains or blinds to block direct sunlight and reduce heat gain. This will help maintain a cooler indoor environment and decrease the load on the AC.
- **Improve insulation:** Enhance insulation in walls, roofs, and windows to minimize heat transfer. Proper insulation will keep the indoor temperature stable, allowing the AC to operate more efficiently and consume less energy.
- **Conduct regular maintenance:** Ensure regular maintenance of AC units to optimize their performance. This includes cleaning filters, checking refrigerant levels, and inspecting ductwork for leaks. Well-maintained ACs operate more efficiently, reducing energy consumption.


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- Use programmable thermostats: Install programmable thermostats to set temperature schedules based on occupancy. This prevents unnecessary cooling when rooms are unoccupied, resulting in energy savings.

By implementing these recommendations and adopting energy-efficient practices, the power consumption of ACs can be reduced, resulting in lower energy bills, reduced environmental impact, and enhanced comfort in the building during summers.

Best Energy Conservation Practices:

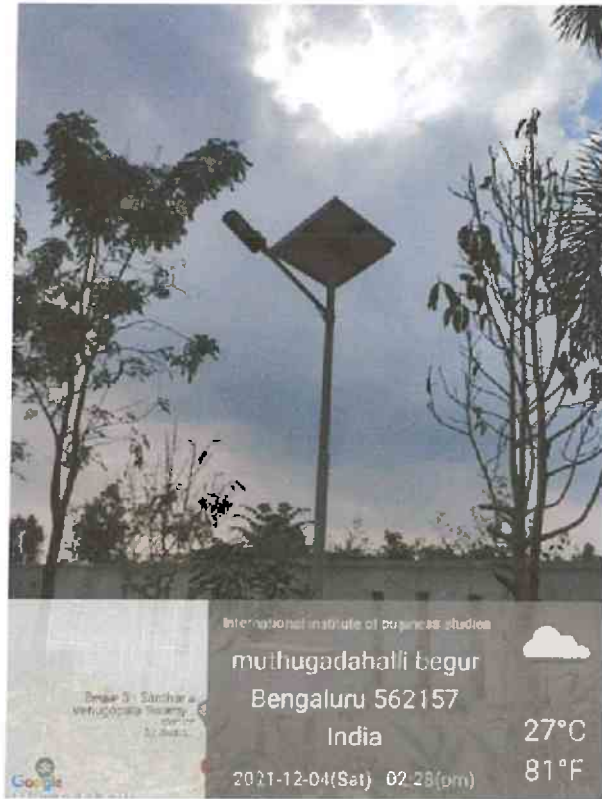
- a) Energy audit is monitored by maintenance department of the college.
- b) Class rooms, corridors, labs are designed in such a way that naturally they are well lighted and ventilated requiring less power for their maintenance.
- c) Normal light bulbs are replaced by LEDs for the energy efficiency and longevity.
- d) All the computers are with LCD monitors for lesser power consumption.
- e) Regular monitoring and maintenance of the equipment's is done to avoid excess power consumption.
- f) Institution electrician repairs and regularly maintain the electronic equipment to reduce the carbon imprint.
- g) Solar lights are used to light up the campus corridor at night.
- h) Students and staffs are regularly given awareness about energy audit.
- i) Air conditioning systems are less frequently used unless mandatory to reduce the emissions of CFC's. (Chloro-fluro carbons)
- j) All the buses are regularly repaired and monitored to reduce carbon emissions.
- k) Commemoration of The National Energy Conservation Day by shutting down power supply for 30 minutes.
- l) Budget towards regular maintenance in the form of salaries to electrician:
 - o MADHU N
 - Employee ID:732
 - o PRAKASH BD
 - Employee ID:857
 - o Budget Spent:
 - 2019-2020 185,453.00 Rs

Pictography:

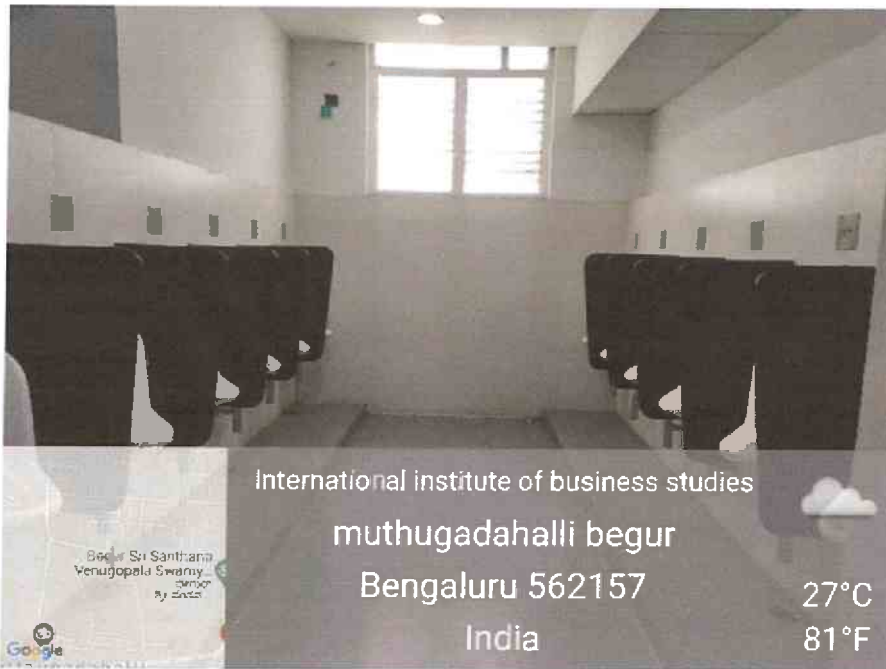
- Solar energy
- Sensor-based energy conservation
- Use of LED bulbs/ power efficient equipment
- Inhouse Electrician

IIBS has established 4 solar street lights to lit up the campus at night using harnessed solar energy.


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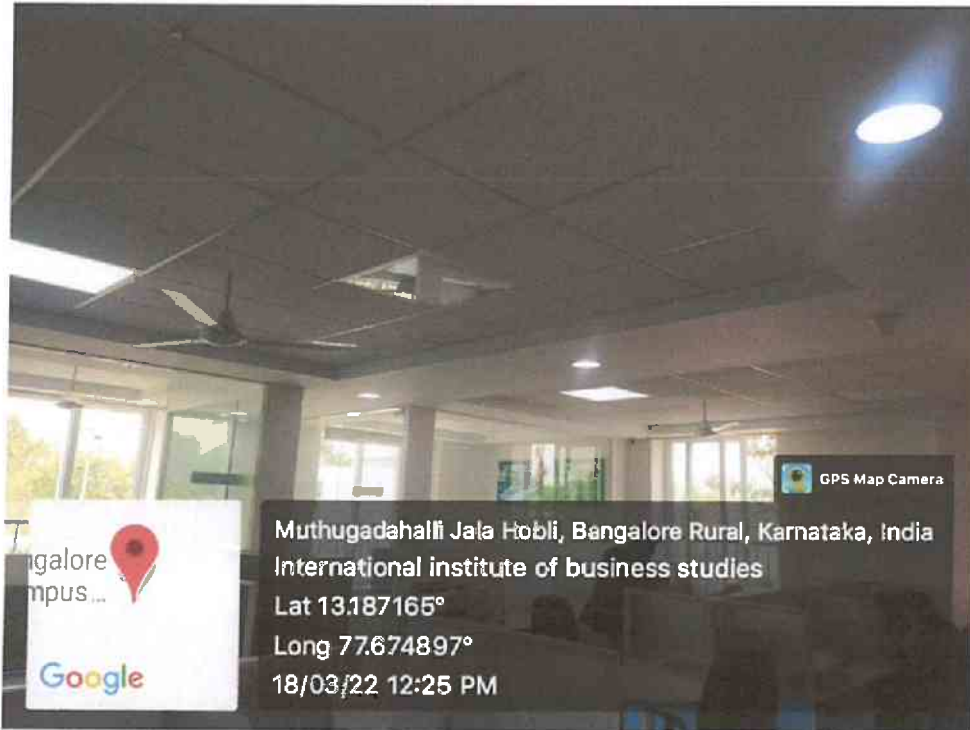


Sensor-based energy conservation



T. James
Principal
International Institute of Business Studies
75, Muthugadahalli, Jala Hobli,
Bangalore North - 562 157.

Use of LED and power efficient equipment :



T. Janu
Principal
International Institute of Business Studies
75, Muthugadahalli, Jala Hobli,
Bangalore North - 562 157.

Awareness to students by display boards



T. Jany
Principal
International Institute of Business Studies
75, Muthugadahalli, Jala Hobli,
Bangalore North - 562 157.

INTERNATIONAL INSTITUTE OF BUSINESS STUDIES



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International Institute of Business Studies, Bengaluru


ENERGY AUDIT REPORT 2020

Audit conducted on 15st May 2021

Report Submitted on 29th May 2021

Energy Auditing Committee:

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Energy Audit Certificate

The International Institute of Business Studies (IIBS) Energy Audit in May 2021 for the academic year 2020-2021, at the IIBS Airport Campus in Bengaluru, aimed to evaluate various aspects related to energy consumption and efficiency. The audit's primary goals were to assess energy costs, analyse energy supply availability and reliability, and investigate energy conservation technologies to reduce overall energy consumption.

During the audit, a comprehensive evaluation of the energy usage at the IIBS Airport Campus was performed, with relevant data on energy consumption, including electricity and any other energy sources used on the premises, being collected.

The energy audit's findings and recommendations were compiled into a comprehensive report. This report provided detailed insights into energy consumption patterns, identified areas for energy savings, and proposed specific measures and technologies to meet energy efficiency and cost-cutting objectives. The report was a useful resource for IIBS management in making informed decisions about energy conservation initiatives and investments.

Overall, the Energy Audit held in 15th May 2021 at the IIBS Airport Campus in Bengaluru provided a comprehensive assessment of energy costs, availability, and supply reliability, as well as proposed energy conservation technologies to reduce energy consumption. The recommendations can help the campus achieve greater energy efficiency, cost savings, and environmental sustainability.

Place: Bengaluru

Date: 29th May 2021

External Auditor

T. Gopi,

(Gomatha Electricals)

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The key objectives of the Bureau of Energy Efficiency include:

- Developing policies and strategies for energy conservation and efficiency.


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- Creating awareness and promoting energy efficiency measures.
- Implementing energy efficiency projects and programs.
- Establishing energy efficiency standards and labeling schemes.
- Accrediting energy auditors and energy service companies (ESCOs).
- Facilitating financing mechanisms for energy efficiency initiatives.
- Conducting training and capacity-building programs.

BEE plays a crucial role in coordinating and implementing energy efficiency programs in India. It collaborates with various stakeholders, including industries, utilities, government agencies, and consumers, to drive energy conservation and promote sustainable practices. BEE also facilitates the adoption of energy-efficient technologies, supports research and development, and monitors energy consumption patterns and trends in the country.

Overall, the Bureau of Energy Efficiency is instrumental in creating a conducive environment for energy audits and energy efficiency measures in India, helping the nation move towards a more sustainable and energy-efficient future.

About College:

Under Graduate Course:

- Bachelor of Business Administration
- Bachelor of Commerce
- Bachelor of Computer Administration

Post-Graduation Courses:


- Master of Business Administration
 - Marketing Management(MM)
 - Finance Management(FM)
 - Human Resource Management(HRM)
 - Business Analytics
 - Production & Operations Management
 - Entrepreneurship & Start-ups
 - Logistics and Supply Chain Management

IIBS:

- Plot area **3844.46 SqM**
- Total built up area **7807.38 SqM**
- No of buildings/blocks. **1**
- Conditioned space area details (% of air-conditioned area) **796.01SqM**

Energy Conservation Initiatives

- Energy audit is conducted periodically to monitor energy consumption.


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- l) Commemoration of The National Energy Conservation Day by shutting down power supply for 30 minutes.

Energy Audit:

Preliminary Questionary: As part of the audit process, a preliminary questionnaire has been designed to determine the total number of electronic equipment present in the campus. This questionnaire aims to gather information regarding various electronic items in order to assess the energy consumption patterns and identify potential areas for energy optimization and efficiency improvement.


The questionnaire includes a comprehensive list of electronic items commonly found in a campus setting, such as air conditioners, fans, lights, CCTV cameras, printers, telephones, scanners, projectors, and more. By obtaining accurate quantities of each electronic item, the audit team will gain insights into the scale of energy usage associated with these devices.

Accurate data on the total electronic equipment in the campus is essential for conducting a thorough energy audit. It serves as a foundation for analyzing energy consumption trends, identifying potential energy-saving opportunities, and formulating effective energy efficiency strategies.

The questionnaire will provide a clear picture of the electronic equipment landscape within the campus, enabling the audit team to focus on specific areas where energy consumption can be optimized. This information will serve as a basis for further investigation, analysis, and recommendations to improve energy efficiency and reduce energy costs.

By understanding the quantity of electronic equipment and their energy usage patterns, the audit team can provide valuable insights and recommendations to the campus management on how to enhance energy efficiency, reduce energy wastage, and create a more sustainable and cost-effective environment.


Overall, the preliminary questionnaire is an important tool in the energy audit process, as it enables the identification and evaluation of electronic equipment present in the campus, forming the basis for further analysis and energy efficiency improvements.


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16. What is the quantity of water filters?
17. How many note counters are present in the facility?
18. How many refrigerators are installed in the facility?
19. How many induction cooktops are present in the facility?
20. What is the quantity of speakers?
21. How many 50W lights are installed in the facility?
22. How many smart screens are present in the facility?
23. What is the quantity of lifts in the facility?
24. How many Sewage Treatment Plants (STPs) are installed in the facility?
25. Please provide the respective quantities for each item listed.

Data:

Electronic Item	Quantity
AC	28
Fans	228
Lights 2*2	154
Lights Round	441
Tube lights	276
Small LED Lights	18
CCTV	86
System standby	135
System	135
Monitors	135
Printer	25
Telephone	19
Scanner	1
Projector	31
Xerox	3
Heater	1
Water filters	4
Note counter	1
Refrigerator	3


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Induction	1
Speaker	16
Smart Screen	1
STP	1
Inverter	1
Borewells	2

Power consumption per item:

Electrocnic Item	Quantity	power consumption per item	total Consumption kWh
AC	28	2000	56000
Fans	228	55	12540
Lights 2*2	154	40	6160
Lights Round	441	20	8820
Tube lights	276	20	5520
Small LED Lights	18	9	162
CCTV	86	7	602
System standby	135	60	8100
System	135	150	20250
Printer	25	40	1000
Telephone	19	4.5	85.5
Scanner	1	4.5	4.5
Projector	31	500	15500
Xerox	3	320	960
Heater	1	1200	1200
Water filters	4	230	920
Note counter	1	90	90
Refrigerator	3	230	690
Induction	1	1600	1600
Speaker	16	100	1600
Smart Screen	1	1200	1200

Sustainable Energy at the Campus

1.	List few ways that you use energy in your institute. (Electricity, LPG, firewood, others). Using this list, try to think of ways that you could use less energy every day.	Electricity is saved by use of LED bulbs for illumination, LPG is saved by use of Pressure cookers for cooking food. Alternate source of energy i.e. Solar lights are Installed.
2.	Are there any energy saving methods employed in your institute? If yes, please specify. If no, suggest some	Yes, Renewable source of energy through solar lights. Use of Natural Lights and Natural Ventilation are promoted.


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3.	How many CFL /LED bulbs has your institute installed?	100% of Total Conventional bulbs are replaced by LED Lights.
4.	Are any alternative energy sources employed / installed in your institute? (Photovoltaic cells for solar energy, windmill, energy efficient stoves, etc.,) Specify.	Yes, photovoltaic cells for solar energy
5.	Do you run "switch off" drills at institute?	Yes
6.	Are your computers and other equipment's put-on power-saving mode?	Yes, In Practice
7.	Does your machinery (TV, AC, Computer, weighing balance, printers, etc.) run on standby modes most of the time? If yes, how many hours?	Yes; AC on stand-by Almost all the hours except when direly needed.

Geotagged Photos of Solar Lights:

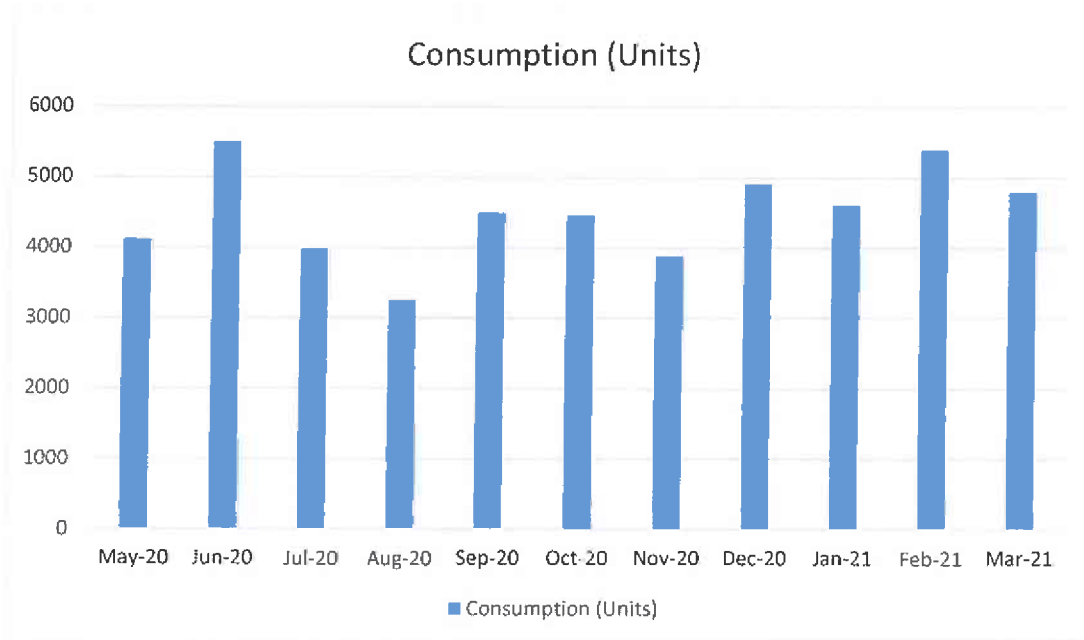


Table showed the power consumption details of last year

Month	Consumption (Units)
May-20	4112.5
June-20	5487.5
July-20	3975
Aug-20	3250
Sept-20	4487.5


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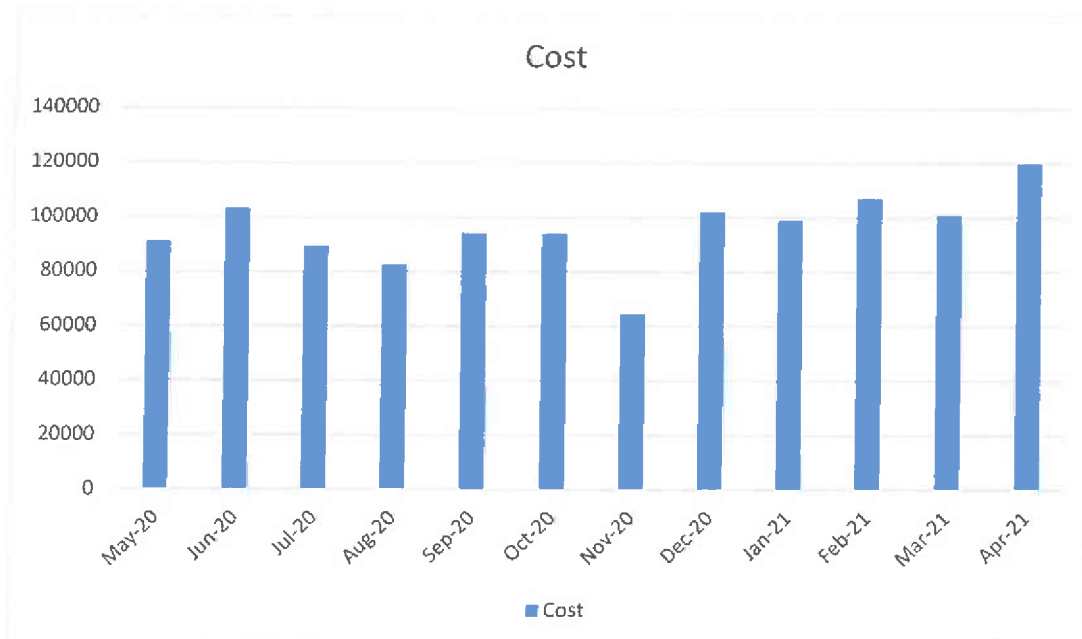
Oct-20	4450
Nov-20	3875
Dec-2020	4900
Jan - 2021	4600
Feb-21	5375
Mar-21	4775
Apr-21	6700
Total Consumption	56,112.5



Total Cost incurred

Month	Cost
May-20	90949.84
June-20	103003.5
July-20	89308.43
Aug-20	82539.75
Sept-20	94237.46
Oct-20	93903.85
Nov-20	64631.63
Dec-20	102205
Jan - 2021	98847.3
Feb-21	107049.6
Mar-21	100806.3
Apr-21	119697.9
Total Consumption	1,199,079.09


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Issues found in the campus:

Solar Energy:

With 56,112.5 units of electricity consumption and annual spend of **1,199,079.09** adoption of solar energy is recommended as an essential step towards a sustainable and cost-effective future. Solar energy offers numerous benefits, including environmental sustainability, energy independence, and significant cost savings. By harnessing the power of the sun through rooftop solar installations, facilities can reduce their carbon footprint and combat climate change. Solar energy is a renewable resource, abundantly available, and produces no greenhouse gas emissions during electricity generation. The adoption of solar energy also provides a degree of energy independence, reducing reliance on grid-supplied electricity and mitigating the impact of power outages. Moreover, solar power offers long-term cost savings by reducing electricity bills and providing a hedge against rising energy prices. With advancements in technology and supportive government incentives, now is the opportune time to embrace solar energy and contribute to a cleaner, greener, and more sustainable future.

Replacement of LCD monitors with LED:

Replacement of LCD monitors with LED (Light Emitting Diode) monitors is suggested as a smart and energy-efficient choice. LED monitors offer several advantages over LCD monitors, making them a worthwhile investment.

Firstly, LED monitors consume significantly less energy than LCD monitors. LEDs are known for their energy efficiency, as they require less power to operate, resulting in lower electricity consumption. By replacing LCD monitors with LED alternatives, organizations can reduce their energy usage and contribute to overall energy conservation efforts.

Secondly, LED monitors provide enhanced visual quality and improved brightness compared to LCD monitors. LED technology allows for better contrast ratios, sharper images, and more vibrant colors,

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providing a superior viewing experience. This can be particularly beneficial for tasks that require accurate color representation or high-definition visuals.

Furthermore, LED monitors have a longer lifespan compared to LCD monitors. LEDs are known for their durability and longevity, resulting in reduced maintenance and replacement costs over time. By adopting LED monitors, organizations can enjoy prolonged usage before needing to replace or upgrade their display devices.

In terms of environmental impact, LED monitors are also considered more eco-friendly. They do not contain harmful substances such as mercury, which is commonly found in the fluorescent backlights used in LCD monitors. Additionally, LED monitors generate less heat during operation, contributing to a cooler and more comfortable working environment.

Considering the energy efficiency, improved visual quality, longer lifespan, and reduced environmental impact, the replacement of LCD monitors with LED monitors is a smart choice. It not only brings cost savings through reduced energy consumption and maintenance but also supports sustainability efforts by reducing carbon emissions.

Usage of AC:

ACs not being used with proper recommendations can lead to increased power consumption during summers. Here's an elaboration on the factors contributing to this issue:

- **Doors not properly closed:** When doors are left open or not closed tightly, cool air from the AC escapes the room, and warm air from outside enters. This results in inefficient cooling as the AC has to work harder to maintain the desired temperature. As a result, more energy is consumed to compensate for the loss of cooled air.
- **Curtains not used:** Curtains or blinds serve as a barrier to sunlight entering through windows. When sunlight enters a room, it heats up the space, causing the AC to work harder to maintain a comfortable temperature. By not using curtains or blinds to block direct sunlight, the cooling load on the AC increases, leading to higher energy consumption.
- **Lack of insulation:** Insulation plays a crucial role in maintaining the coolness inside a room. Poor insulation allows heat to penetrate the room, forcing the AC to continuously cool the space to counteract the heat gain. This constant cooling requirement significantly raises energy consumption.
- **Inadequate sealing of windows and gaps:** If windows and gaps are not properly sealed, warm air from outside can infiltrate the room, while cool air from the AC escapes. This reduces the effectiveness of the AC's cooling capacity and leads to wastage of energy.

To address these issues and reduce power consumption, the following recommendations can be implemented:

- **Educate occupants:** Raise awareness among building occupants about the importance of closing doors and windows properly to prevent cooled air from escaping and warm air from entering.
- **Promote the use of curtains and blinds:** Encourage the use of curtains or blinds to block direct sunlight and reduce heat gain. This will help maintain a cooler indoor environment and decrease the load on the AC.
- **Improve insulation:** Enhance insulation in walls, roofs, and windows to minimize heat transfer. Proper insulation will keep the indoor temperature stable, allowing the AC to operate more efficiently and consume less energy.


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- Conduct regular maintenance: Ensure regular maintenance of AC units to optimize their performance. This includes cleaning filters, checking refrigerant levels, and inspecting ductwork for leaks. Well-maintained ACs operate more efficiently, reducing energy consumption.
- Use programmable thermostats: Install programmable thermostats to set temperature schedules based on occupancy. This prevents unnecessary cooling when rooms are unoccupied, resulting in energy savings.


By implementing these recommendations and adopting energy-efficient practices, the power consumption of ACs can be reduced, resulting in lower energy bills, reduced environmental impact, and enhanced comfort in the building during summers.

Best Energy Conservation Practices:

- a) Energy audit is monitored by maintenance department of the college.
- b) Class rooms, corridors, labs are designed in such a way that naturally they are well lighted and ventilated requiring less power for their maintenance.
- c) Normal light bulbs are replaced by LEDs for the energy efficiency and longevity.
- d) All the computers are with LCD monitors for lesser power consumption.
- e) Regular monitoring and maintenance of the equipment's is done to avoid excess power consumption.
- f) Institution electrician repairs and regularly maintain the electronic equipment to reduce the carbon imprint.
- g) Solar lights are used to light up the campus corridor at night.
- h) Students and staffs are regularly given awareness about energy audit.
- i) Air conditioning systems are less frequently used unless mandatory to reduce the emissions of CFC's. (Chloro-fluro carbons)
- j) All the buses are regularly repaired and monitored to reduce carbon emissions.
- k) Commemoration of The National Energy Conservation Day by shutting down power supply for 30 minutes.
- l) Budget towards regular maintenance in the form of salaries to electrician:
 - o MADHU N
 - Employee ID:732
 - o PRAKASH BD
 - Employee ID:857
 - o Budget Spent:
 - 2019-2020 185,453.00 Rs

Facilities of Alternative energy resources and energy conservation measures:

- Solar energy
- Sensor-based energy conservation
- Use of LED bulbs/ power efficient equipment
- Inhouse Electrician


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