



## Certificate

This is to certify that Green Audit was carried out at Karnataka Sangha's Manjunatha College of Commerce, Kanchangaon, Khambalpada, Thakurli East, Thane - 421201 during the month of March 2023.

The scope, coverage, findings and recommendations are submitted vide our report SCPL-PR-920-200323 dated March 20, 2023.

For **SENERGY CONSULTANTS PVT LTD**

A handwritten signature in black ink, appearing to read 'Tushar Kamble', is written over a light blue rectangular background.

**Tushar Kamble**  
**(Project coordinator)**

## Certificate

This is to certify that Energy Audit was carried out at Karnataka Sangha's Manjunatha College of Commerce, Kanchangaon, Khambalpada, Thakurli East, Thane - 421201 during the month of March 2023.

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For **SENERGY CONSULTANTS PVT LTD**



**Tushar Kamble**  
(Project coordinator)

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For **SENERGY CONSULTANTS PVT LTD**



**Tushar Kamble**  
(Project coordinator)

Green, Energy & Environment Audit Report  
Manjunatha College of Commerce

# Report

On

## GREEN, ENERGY & ENVIRONMENT AUDIT

For

Academic Year 2022-2023

of

**Karnataka Sangha's  
Manjunatha College of Commerce  
Thakurli (East), Thane**

Prepared

By

**Senergy Consultants Pvt Ltd  
Mumbai**

**March – 2023**

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# I Introduction

Green & Energy Audit was undertaken at Karnataka Sangha's Manjunatha College of Commerce, Kanchangaon, Khambalpada, Thakurli East, Thane - 421201, during the month of March 2023.

The organization is very keen to promote green culture wherever possible, as a commitment towards better environment and conservation of energy. A lot of efforts have already been put up to bring down the carbon footprint. To further optimize consumption and identify saving opportunities, M/s Senergy Consultants was assigned to carry out Green & Energy Audit of the premises.

This Audit Report presents the analysis of the data collected, observations made at the facility and is governed by the objectives, scope of work, methodology etc. discussed in the ensuing paragraphs.

## **Team:**

The team members of the audit study.

- Mr Ravindra Datar
- Mr Nitesh Kharche

## **Acknowledgment:**

We wish to express our gratitude towards Dr. Sushila Vijaykumar for having given us the opportunity for conducting the study and the support provided during the study.

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## II

# Executive Summary

The premises were evaluated against the various criterions laid down by the National Assessment and Accreditation Council (NAAC). The major observations are.

### Air Quality & Ventilation:

- The classrooms and other area are well ventilated to ensure proper air quality.
- The fans are appropriately installed to ensure proper air circulation.
- The outdoor and few indoor plants have also been provided to improve the environment.
- The air conditioned rooms are provided with proper ventilation and fresh air.

### Lighting System:

- The usage of natural light is optimized through well designed structure and windows.
- Most of the light fitting are provided with high efficiency LED lamps. The remaining lamps are being replaced with LED lamps.
- It is suggested to automate switching of lamps in the common areas and washrooms with sensor based control.

### Green Campus Initiative:

- The movement of vehicle inside the campus is restricted with vehicles of Staff and Special Dignitaries are allowed to enter the campus with designated parking area.
- The usage of plastic is complete ban inside the campus.
- The campus is surrounded with a lot of greenery, trees, and proper landscaping.
- The college has internal committee for conservation of resources like energy, water.

### Environment & Energy Initiative:

- Various Green & Environment based seminars were organized within the college campus. Staff members have been participating in various research programs based on Environment & Green Energy.
- Various Tree Plantation & Tree tagging programs has been carried out within and outside the campus.
- Various Clean-up drives were undertaken by students and staff members.

### Water Quality & Conservation:

- The water is supplied by the Municipal Corporation, which is a common practice in Mumbai, Thane & Navi Mumbai.
- Water purifiers & coolers are provided at convenient locations.
- The distribution network and piping are satisfactory and adequate.
- The toilets are provided with water efficient (low usage) fittings.

### Waste Management:

- The effluent water is discharged in the municipal drain, which is a common practice in and around Mumbai, Thane & Navi Mumbai.
- The organic waste is segregated and converted into manure in the composting pits.
- There is no hazardous or medical waste generated in the college.
- The electronic gadgets / waste is either donated if useful or handed over to appropriate waste collectors.
- The general solid waste is disposed through municipal corporation.

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**Air Conditioning System**

- The Air Conditioners are operated as required with manual control. The operation is minimal consequently automation may not be economical.
- The room temperature is maintained at 24 to 25 °C, which is well within the recommended values.
- The Air Conditioners are serviced regularly and properly maintained.
- Most of the Air Conditioners units are energy efficient with 3 star rating.

**Infrastructure usage:**

- The on-campus movement is distributed with multiple entrances as well as staircases.
- Ramp is provided on the ground floor to address the needs of differently abled persons.
- The fire extinguishers are provided at key areas.
- The draining system for washrooms is efficient and effective.
- There were no seepages observed in the building premises.

**Green IT culture:**

- The Energy efficient computers and laptops have been procured.
- The electronic communication is encouraged to minimize usage of papers.
- Most of the papers are reused for doubled sided printing to further minimize usage of paper.

**Renewable Energy:**

- The possibility of installing Solar Photovoltaic System with NET metering may be assessed to meet part of the electricity consumption.
- The quantity of plate waste (organic waste with higher starch contents) is negligible, consequently, there is no potential for biogas generation.

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## III Electrical Gadget

**Lamps:**

Location	LED	CFL
	22 W	18 W
<b>Ground Floor</b>		
Wash Room Male	1	
Wash Room Female	1	
G-6	5	6
Auditorium G-8 To G-9	8	
G -11	5	
G -10	2	
G -7	4	
G- 12	1	
G - 5	4	
G- 13	2	
G- 4	4	
G - 3	12	
G- 1	8	
G- 14 To G- 15	10	
Corridor	10	6
B-1 Gymkhana	10	6
Canteen Area	8	
<b>First Floor</b>		
F-5	5	
F-6	5	
F-7	5	
F-8	2	
F-9	7	
F-11	2	
Corridor	5	6
F-4	5	
F-3	5	
F-2	5	
F-12	6	
F-1	9	4
F-10 Store Room	1	
<b>Second Floor</b>		
S-7 T.Y.B.B. J	4	
S-6 S.Y.B.B. I	4	
S-5 F.Y.B.B. I	4	
S-18	5	
S-4 T.Y.B.M. S	4	

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Location	LED	CFL
	22 W	18 W
S-3 S.Y.B.M. S	4	
S-2 F.Y.B.M. S	4	
S-1 M. Com	2	
S-17 NAAC Room	1	
S-16	1	
S-8 F.Y.B.A.F (A)	4	
S-9 F.Y.B.A.F (B)	4	
S-10 S.Y.B.A.F (A)	4	
S-11 S.Y.B.A.F (A)	4	
S-12 T.Y.B.A.F (A)	4	
S-14 M. Com	1	
S-15 S.Y.J.C	5	
S-13	4	
Corridor	7	

## Ceiling Fans:

Location	Quantity (No.)
<b>Ground Floor</b>	
G-6	2
Auditorium G-8 To G-9	12
G -11	6
G -10	2
G -7	3
G- 12	
G - 5	6
G- 13	1
G - 3	12
G- 1	2
G- 14 To G- 15	7
Corridor	3
B-1 Gymkhana	4
Canteen Area	4
<b>First Floor</b>	
F-5	7
F-6	7
F-7	7
F-8	2
F-9	10
F-11	1
Corridor	2
F-4	7
F-3	7
F-2	7
F-12	3

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Location	Quantity (No.)
F-1	6
F-10 Store Room	1
<b>Second Floor</b>	
S-7 T.Y.B.B. J	5
S-6 S.Y.B.B. I	5
S-5 F.Y.B.B. I	5
S-18	6
S-4 T.Y.B.M. S	5
S-3 S.Y.B.M. S	5
S-2 F.Y.B.M. S	5
S-1 M. Com	3
S-17 NAAC Room	1
S-16	1
S-8 F.Y.B.A.F (A)	5
S-9 F.Y.B.A.F (B)	5
S-10 S.Y.B.A.F (A)	5
S-11 S.Y.B.A.F (A)	5
S-12 T.Y.B.A.F (A)	5
S-14 M. Com	1
S-15 S.Y.J.C	7
S-13	5
Corridor	1

**Air Conditioners:**

Location	Type	Capacity	Quantity (No.)
<b>Ground Floor</b>			
G-6	Split	1.5 Ton	2
G - 3	Split	1.5 Ton	2
G- 1	Split	1.5 Ton	1
G- 14 To G- 15	Split	1.5 Ton	3
<b>First Floor</b>			
F-1	Split	1.5 Ton	2
<b>Second Floor</b>			
S-7 T.Y.B.B. J	Split	1.5 Ton	1
S-6 S.Y.B.B. I	Split	1.5 Ton	1
S-4 T.Y.B.M. S	Split	1.5 Ton	1
S-3 S.Y.B.M. S	Split	1.5 Ton	1
S-2 F.Y.B.M. S	Split	1.5 Ton	1
S-9 F.Y.B.A.F (B)	Split	1.5 Ton	1
S-10 S.Y.B.A.F (A)	Split	1.5 Ton	1
S-11 S.Y.B.A.F (A)	Split	1.5 Ton	1
S-12 T.Y.B.A.F (A)	Split	1.5 Ton	1

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**Observations & Suggestions:**

- Most of the light fitting are provided with high efficiency LED lamps. The remaining lamps are being replaced with LED lamps.
- The fans are of standard efficiency; which may be replaced with high efficiency fans with BLDC motor.
- The Air Conditioning Units are with 3 star rating, which are intrinsically operate at high energy efficiency.
- The Air Conditioners are operated as required with manual control. The operation is minimal consequently automation may not be economical.
- The temperature is maintained at 24 to 25 °C for air conditioning spaces, which is within the recommended values.
- The rooms are well ventilated and provided with fans at appropriate location for proper air circulation.
- The gadgets are services properly and maintained in good condition.

**Electricity Bill:**

The electricity for the entire premises is supplied by Maharashtra State Electricity Distribution Company Limited (MSEDCL).

<b>Consumer Name: Shri Principal Karnataka Sangha's Manjunatha College of Commerce</b>	
Tariff Category: 70 LT-II B	Consumer No. 020292027185
Meter No.: 055-X1144902	Contract Demand: 23.00 KVA

Description	Unit	Jan-23	Feb-23
Energy Consumption	KWH	3620	3028
Bill	Rs	72130	58690
Cost	Rs/KWH	19.93	19.38

The power cost is within the normal range.

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## IV Environmental System

### Ventilation & Air Quality:

- The air ventilation is adequate.
- Several indoor & outdoor plants have been installed to improve air quality.



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- Natural light is been used for maximum illumination during daytime.
- It has been a general practice to switch off the fans & lights in an unoccupied area.



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## V Water Management

### Consumption Pattern:

The water supplied by the municipal corporation is used for drinking & other applications like washing of utensils and other requirements. The incoming water from the municipal corporation is metered.



The consumption pattern was analyzed by the water bills. The details are as under.

Period	Days	Consumption	Bill Amount	Cost
		KL	Rs	Rs/KL
<b>Connection No: 310008875</b>				
23-12-2021 to 22-11-2022	335	2950	44305	15.02
31-08-2021 to 22-12-2021	114	829	12454	15.02

Period	Days	Consumption	Total No. of Person	Water Consumption
		KL		L/Person/Day
<b>Connection No: 310008875</b>				
23-12-2021 to 22-11-2022	335	2950	1988	4.43
31-08-2021 to 22-12-2021	114	829	1988	3.66

The water consumption as well as cost is generally within the norms.

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**Water Distribution System:**

The distribution network and piping are more or less satisfactory and adequate.

**Water Coolers & Purifiers:**



Sr No	Location	Quantity (No.)
1	Ground Floor	1
2	First Floor	1

Water purifiers & coolers are provided at convenient locations.

**Rainwater Harvesting:**

The rain water from the terrace area of the college building is being drained in to municipal storm water system through requisite ducts and pipes.

However, considering proximity to the seashore, rain water harvesting may not be practical.

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## VI Waste Generation & Management

### Sewage & Wastewater:

- The sewage is disposed through municipal system.
- There is no generation of harmful or hazardous effluent.
- The sewage treatment plant is not required due to minimal generation of waste.
- The municipal corporation charges cess for treating and disposing wastewater.

### Solid Waste:

- The waste is segregated and disposed through municipal disposal system.
- The dustbins for Recyclable waste and Non-Recyclable Waste have been provided at appropriate locations.
- The electronic gadgets with residual life may be donated while the electronic waste is properly segregated and handed over to appropriate scrap collector.
- The organic as well as inorganic waste is segregated in the college premises. The organic waste is used to generate manure by composting.



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- The non-organic waste is collected in garbage bins and disposed of through Municipal system.



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## VII Infrastructure & Safety



The premises are provided with multiple staircases with necessary entrances to ensure quick and effective movement in normal as well as emergency conditions.

Ramp is available for differently abled students.



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**Parking space:**



There is adequate parking space for vehicles/four wheelers. However, almost all the students and many of the faculty members avail public transport system which is very convenient due to proximity to railway station and bus services.

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**Firefighting & fire escape system:**



Sr No	Location	Type	Quantity
1	Ground Floor	Powder	6
2	First Floor	Powder	3

There are efficient fire extinguishers in the premises; which are checked / refilled as per the stipulated frequency.

The premise is provided with multiple staircases with requisite entrances to ensure quick and effective movement in emergency conditions.

**Draining system:**

The drains from the washrooms are connected to the municipal drainage, which is a common practice in the colleges in and around Mumbai.

The municipal corporation charges cess for water disposal.

**Seepage in the building:**

The premise was visually inspected for seepages.

No seepages were observed in any of the places.

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## VIII Green Culture

### Computers/Laptops:



1. The LED / LCD monitors & Laptops has been procured, which are energy efficient.
2. These monitors are not only energy efficient but also generate minimal heat and cut down on air conditioning load.

The following steps may be initiated to further enhance efficiency of the systems.

1. An efficient power management system may be incorporated to
  - a. Switch off the display if not in use.
  - b. Put the computer in Sleep mode / switching off the machines, if not used for prolonged period.
2. Optimize brightness of the screen.
3. Discourage use of screen savers, which has similar power consumption.

### Paper-less communication:

The major internal as well as external communication is through electronic medium.

### Re-using one sided paper for printing:

It was observed that two side printing / printing on the back side of used paper in more than 80% of the cases.

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Green initiatives taken by students & staff members:



Cleanliness outside the college premises.



Demonstration of fire extinguisher



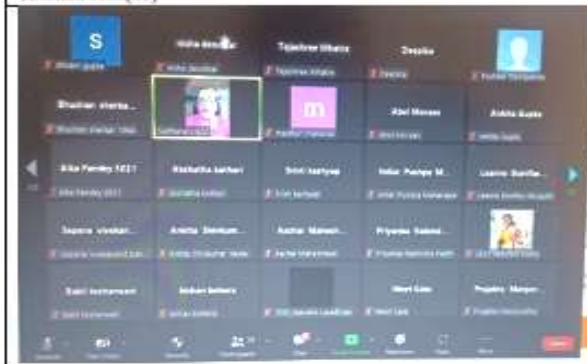
Guest lecture on Geospatial technology



Tree plantation near Usma Petrol pump-  
Dombivli(E)



Tree tagging and tree appreciation at Devrai Project at  
Titwala.



Online guest lecture on "Environmental Protection Low& its realityby Advocate Sadhana Mahashabde

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Poster Exhibition on various environmental issues and Highlighting importance of Millets



Workshop on Mangrove conservation for carbon sequestration by Dr. Purshottam Kale on World Mangrove conservation Day



Organisation Best out of waste- common practice in college.



Segregation of E-waste. Paper waste. Plastic and metal waste.



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Organisation of Rally along with Kalyan Dombivli Municipal Corporation



Cratation of plastic Awareness- playcards



Road safty guidacne by RTO inspector Shri Khairnar



Guidance on cybeer security By PSI Shri Jadhav



Every year Helping KDMC for Nirmalya Collection during Ganapati Immersion



Organisation of workshop on Eco-friendly Ganapati idol making

Beyond the campus activities-- Field visit has organised at Maharashtra Nature Park-Sion, at Ambarnath Shiva Temple and Parlay G factory.

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## IX Renewable Energy

### **Solar Photovoltaic:**

It is suggested to install rooftop solar panels with net metering for captive usage.

### **Solar Thermal:**

There is no application of solar thermal system and does not find attractive in this case.

### **Biogas Plant:**

There is no possibility of installing biogas plant for cooking as the quantity of plate waste is negligible.

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