

ESTD : 1987

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ಶ್ರೀ ಚನ್ನಗಿರಿಶ್ವರ ಪ್ರಸಾದಿಕ ಕಲಾ, ವಿಜ್ಞಾನ ಹಾಗೂ ದು. ದಾ. ಶಿರೋಲ ವಾಣಿಜ್ಯ ಮಹಾವಿದ್ಯಾಲಯ,



(ಶಾ. ಮುಧೋಳ) ಮಹಾಲಿಂಗಪುರ - 587 312. (ಜಿ. ಬಾಗಲಕೋಟೆ)

( ನ್ಯಾಕಸಿಂದ ಮರು ಮಾನ್ಯತೆ 'B++2.81' CGPA )

KLE Society's

SHRI CHANNAGIRISHWAR PRASADIK ARTS, SCIENCE AND D.D. SHIROL COMMERCE COLLEGE,

Tq : Mudhol

MAHALINGPUR - 587 312.

Dist : Bagalkot

( NAAC Re-accredited 'B++' 2.81 CGPA )

ಉಲ್ಲೇಖ ಸಂಖ್ಯೆ : 021./..... /.....

ದಿನಾಂಕ : 14/03/2022

**Quality audits on environment and energy are regularly undertaken by the institution**

7.1.6.1. The institutional environment and energy initiatives are confirmed through the following

1. Green audit
2. Energy audit
3. Environment audit
4. Clean and green campus recognitions/awards
5. Beyond the campus environmental promotional activities

**Options:**

- A. Any 4 or all of the above
- B. Any 3 of the above
- C. Any 2 of the above
- D. Any 1 of the above
- E. None of the above

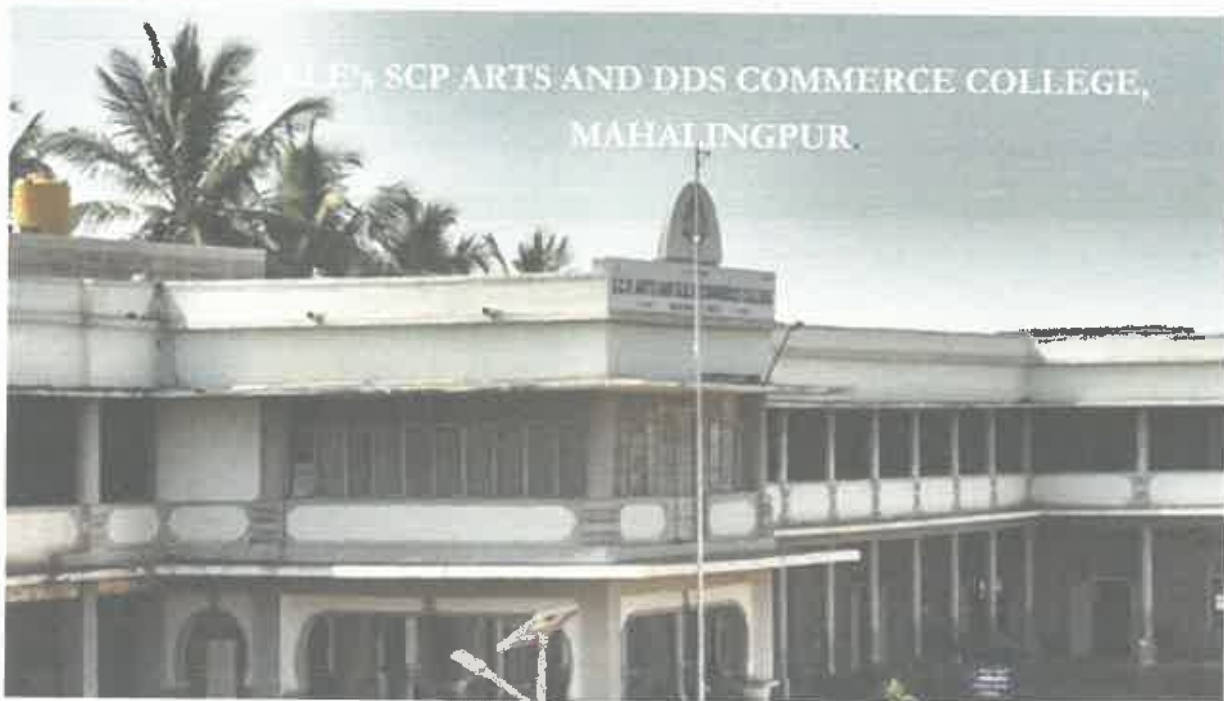


  
GRADE-1 PRINCIPAL  
KLE Society's  
S.C.P. Arts, Science & D.D.S. Commerce College  
MAHALINGPUR-587312 Dist. Bagalkot

# GREEN AUDIT REPORT

## 2019-20

in compliance with the statutory requirements under the  
NAAC accreditation procedures



**Audited by:**

**Principal Lead Auditor:**

**Mallikarjun A Kambalyal.** CEA, ISO 50001, 14001 Lead Auditor.

**SUNSHUBH TECHNOVATIONS PVT LTD.,**

120-2, LGF, 'A' wing, IT Park,  
Hubli – 580029. Karnataka. India.

German off: Neuer Weg 166, 47803 Krefeld,  
Dusseldorf. Germany Anbieter-Nr 1041388



**Website:** [www.sunshubhrenewables.com](http://www.sunshubhrenewables.com)

**Email:** [malhu\\_solar@yahoo.co.uk](mailto:malhu_solar@yahoo.co.uk), [ceo@sunshubhrenewables.com](mailto:ceo@sunshubhrenewables.com)

### **CARBON FOOTPRINT - GREEN PLEDGE** (proposed)

We the Principal, the staff and students, adopt responsible practices in our daily activities with due regard to the environment. We set and continually review objectives and targets for achieving our goal to protect our entire college premises in front, backyard and all other non-approachable areas of all primary and secondary pollutions.

We seek to compile with safety and environmental regulations to implement inhouse standards to improve our environmental performance. We commit ourselves to the safe operation of all our working habits, be it in classrooms, library, canteen, on road, off road, in-campus out-campus as well as at our place of stay. We adhere to reduce environmental load by efficiently using resources, saving energy, reducing waste, encouraging material recycle, with special emphasize to minimising emissions of greenhouse gases, ozone depleting substance and particle matter.

We endure to minimise environmental loads and adopt environmentally friendly technologies when ordering and purchasing necessary products and resources. We endure to attend educational programs and promulgate our close friends and colleagues to follow suite We endure to ensure that we recognize the essence of this Green policy by actively and aggressively conducting workshops and training to all in environmental concepts. We make wide ranging social contribution to close association with the students, teaching staff, administrative staff, housekeeping staff by disclosing environmental information and supporting environmental consumption.

-Sd-

Principal

*(Indicative templet for display at all prominent areas, waiting rooms, canteen, library, relaxing areas in the campus.)*

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#### **THOUGHT FOR EVERY MOMENT**

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 988 tonnes of paper will be saved every day. This is equivalent to saving 2748.34 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year.  
**SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.**

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**EXECUTIVE SUMMARY.**

Sr No	Observation*	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*
	Differently abled children.	Committee to monitor and arrange the basic needs like commutation, sitting arrangements, washroom for these special children.				
	Girl children	To provide safe and dignified study time by providing health safety provisions in the campus.				
	Green Commute	To promote green commute within the campus and also outside the campus.				
	Green energy concept	College has kickstarted an initiative of lab testing the Solar thermal energy (Fresnel concentrating solar)				
1	Rain Water Management	No serious water problem seen	Future shortage of water	Perforated Pavers and water management system.	Yes, Capital Intensive	Improved quality of water and high yield. Calls for reduced pumping hours.
2	Solid Waste Management	Spilling of waste	Dirty used packages in and around the college	Incorporate need for cleanliness and place waste collection	Rs.4500/- per set	Reduced cleaning hours and good hygienic conditions.
3	Health Hazard	Sanitary pads disposal provision.	Open area disposal	Incinerator placed at convenient point.	Rs. 10000/- to 15000/-	Clean and safe health.
4	Natural Lighting	Un cleaned windows and ventilators, Forced switching on	High energy bills	Clean the window panes and allow maximum natural light	Nil, in house manpower.	Substantial cost of energy bills on lighting.
5	Natural Ventilation	Permanently closed ventilators.	Creation of hot air pockets below the ceiling.	Open the Ventilators for easy exit of hot/warm air from the rooms.	Nil, in house manpower.	Eliminates use of Electrical Fans and Substantial cost of energy bills

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**Criteria 7.1.6**

**GREEN AUDIT COMPLETION CERTIFICATE**

I, Mallikarjun A Kambalyal, endorse and confirm that the GREEN Audit has been carried out on 7<sup>th</sup> Jan 2020 under the instructions of Dr.B. M. Patil, Principal, KLE's SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR. This report is generated based on the site visits and evidence collected from the site.

All attempts have been made to evaluate the scope for development and inculcate green practices in the campus and extended throughout the campus. The focus is also laid to make positive impact on the society for a better living.

I also confirm and sign this certificate, in case the institution needs demonstration, my team of professionals shall be happy to do so.

We present this report to much more than the legal or mandatory compliances. This report is tabled in two parts. The first forms the core discussions which are general in nature. The second section is subject specific under the statutory requirements of the NAAC accreditation norms. They are Audit reports on, Green aspects, Energy aspects, Environment aspects, Health aspects and the discussions on net CARBON FOOTPRINT & the CARBON HANDPRINT initiatives.

Any modifications, changes, omissions after the site visit shall be exclusive.



**Authorised Auditor.**

**Mallikarjun A. Kambalyal B.E (E&C)**

**Certified Energy Auditors EA-3485& ISO 50001:2011 & ISO14001:2015 Lead Auditor.**



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**BUREAU OF ENERGY EFFICIENCY**



Examination Registration No. : **EA-3485** Serial Number **2838**

Certificate Registration No. : **2838**

**Certificate For Certified Energy Manager**

This is to certify that Mr./Mrs./Ms. **Mallikarjun A Kambhwal** Son/Daughter of Mr./Mrs. **Andasappa V Kambhwal** who has passed the National Examination for certification of energy manager held in the month of **April 2006** is qualified as certified energy manager subject to the provisions of Bureau of Energy Efficiency (Certification Procedures for Energy Managers) Regulations, 2010.

This certificate shall be valid for five years with effect from the date of award of this certificate and shall be renewable subject to attending the prescribed refresher training course once in every five years.

His /Her name has been entered in the Registrar of certified energy manager at Serial Number **2838** being maintained by the Bureau of Energy Efficiency under the aforesaid regulations.

Mr./Mrs./Ms. **Mallikarjun A Kambhwal** is deemed to have qualified for appointment or designation as energy manager under clause (f) of Section 14 of the Energy Conservation Act, 2001 (Act No.52 of 2001).

Given under the seal of the Bureau of Energy Efficiency, this **7<sup>th</sup>** day of **February, 2013**

  
Secretary  
Bureau of Energy Efficiency  
New Delhi

Dates of attending the refresher course	Secretary's Signature	Dates of attending the refresher course	Secretary's Signature
<b>28.01.2028</b>			

**Bureau of energy Efficiency Regd No: EA3485**

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## Certificate of Successful Completion

**Intertek**

*This is to Certify that*

**MALLIKARJUN A KAMBALYAL**

*has successfully completed the*

**Intertek**

**CQI & IRCA Certified ISO 14001:2015  
Auditor Conversion Training Course**

*The Course includes the assessment and evaluation of Environmental Management Systems to conform to the requirements of ISO 14001:2015 and ISO 19011:2011*

*This course is certified by the Chartered Quality Institute (CQI) and the International Register of Certificated Auditors (IRCA)  
- IRCA REFERENCE 18993 -*

*The course meets the training requirements for individuals seeking certification under the IRCA Auditor Certification Scheme*



Authorising Signature: *Vijay A. Kambalyal*

Course Dates: 12<sup>th</sup> - 16<sup>th</sup> July 2017

Certificate Number: 47730

Membership Application To Be Made Within 30 Days From Last Day of Course

**ISO Certified Lead Auditor. Certificate No: 47730**

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**bsi.**

# BSI Training Academy

This is to certify that

**Mallikarjun A. Kambalyal**

has attended and passed

**Energy Management Systems (ENMS) Auditor/Lead Auditor Training Course  
(ISO 50001:2011)**

Proprietor Ramkrishnaiah, Director of Training

Date: 14/04/2016 - 15/04/2016

Certificate Number: ENR-00253448

This certificate is valid for 3 years from the date above for the purpose of registration as an auditor with IRCA.



Course number AT2535 certified by IRCA

...making excellence a habit.

The British Standards Institution is incorporated by Royal Charter  
1901. The first copyright office was set up in 1793. The first copyright office was set up in 1793. The first copyright office was set up in 1793.

**ISO Certified Lead Auditor. Certificate No: ENR-00253448**

**THOUGHT FOR EVERY MOMENT**

There are about 19,00,00,000 students in INDIAN. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 988 tonnes of paper will be saved every day. This is equivalent to saving 2746.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year,  
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## Why is this audit being carried out.

### Why it's important to have an Energy Audit

Whether you own or manage a small business, a large commercial facility, or a manufacturing operation, it's important to take advantage of any tips, programs and incentives that will help you save money on your energy bills. There are measures that will generate savings to positively impact your bottom line immediately, as well as longer-term strategic initiatives to assess your needs and stabilize your energy spend in the longer term – which is great news for your budget!

One such initiative is an energy audit. Energy audits reveal your usage patterns, identify waste, over-expenditure and, generally, make you fully cognizant of where your energy dollars are going. This knowledge will enable you to be more efficient with your energy use and be able to track and accelerate savings. Energy Audits may sound expensive or complicated, but they can be free and are easier than you think.

### What is an Energy Audit?

An energy audit is an analysis of a facility, indicating how and where that facility can reduce energy consumption and save energy costs. Its insight to energy efficiency and conservation can lead to significant savings on the company's utility bill.

### Why Should You Get an Energy Audit?

Energy costs are soaring and your business can be at considerable risk if you do not take the guesswork out of your energy usage and the budget you need to cover it. Energy audits identify where your business is wasting energy. Residential and commercial properties account for around 10% of carbon emissions in the US, according to the EPA, which means they are very inefficient and waste huge amounts of energy and... revenue. An energy audit helps by revealing just how and where energy is being wasted. With thousands of commercial energy customers nationwide, we are well-qualified to advise you on which methods are best used for reducing energy waste and

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overall energy consumption. Let's start with a simple free evaluation of your bills and show you how we have been found to save between 5% and 35% for many of our customers.

In the case of energy, less is more. Lower energy consumption equals lower energy costs. And, of course, less energy consumption is obviously good for the environment.

As you can see, to be truly effective, energy management requires a strategy just like the other aspect of your operation and measures to curb costs can be simple and in some cases free. Gaining more control over your energy costs will improve the general health of your budget. Not only that but reducing your CARBON FOOTPRINT is great for the environment too!

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- visit areas under audit

#### On site conditions:

- Understand the scope of audit
- Analyse the strengths and weaknesses of the internal controls
- Conduct audit with end user comfort focused and making it easy to perform.
- Collect necessary evidence so that the stakeholders stand to understand how and where they are going wrong in the process of their conduct.
- Post audit draw the report based on the data collected.
- On confirmation of the preliminary report, draw a final report of the observations and inference with accuracy more near to implementable way.
- Discuss various remedial measures for alternatives if required.
- Prepare an action plan to overcome the shortcomings with continual observation on the action plan initiated.

#### Steps under green audit

**Water audit:** Water is one of the cheapest commodities next to the Air we breathe. Although we Indians, use less water in comparison to western countries. However, the extent of pollutants that we leave behind has polluted all the resources including the deep well.

Rainwater harvesting is one of the best techniques that can be adopted by harvesting the rainwater and using it at the time of scarcity. the audit team to observe and investigate the relevant methods that can be adopted and implemented and draw the balance of use of water.

**Waste management audit:** The point of generation of waste, the type of waste generated, i.e., hazardous, recyclable and organically compostable wastes and segregating method at the

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point of generation for easy and best way to handle the same. Evaluating such methods to minimise the use of resources in the process of their management.

**Energy audit:** It deals with use of energy in the conduct of the process. The priority is topmost for conservation over efficiency; hence, energy auditor should always consider not to use the energy if necessary. At best it can be used judiciously.

**Environmental quality audit:** It analyses air quality, noise level and the programs undertaken by the institution for plantation creating awareness of trees around us and how nature provides us with remedial measures within its framework.

**Health audit:** In the process of use of resources and conduct of the activities, they can develop impact on human health, that might be off minutely harmful, cause permanent disorder or may even cause death. Occupational health hazards are discussed in detail and the stakeholders are informed of the same and required necessary remedial measures indicated.

**Renewable energy:** To make in organisation net zero net zero carbon emission use of renewable resources including energy such as solar wind biogas geothermal energies are put into ooh utilisation.

**Carbon handprint:** The net impact All the above audits should be to make an organisation contribute zero emissions which are called bye bhai use of water generation of waste use of energy e environmental damage health damage and finally to explore if the campus or direction can go in in contributing to third-party emissions minimising

**Benefits of green audit:** To draw home the benefits, the system has been separated out into various audits as listed above. In doing so, and if audit findings are effectively implemented there are many advantages that can be practised in the process

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## FACTOR CONSIDERATION

It is vital factor to consider the limitations beyond human control. However, our work culture, should be oriented towards the better and safe dwelling. Considering the present health hazards, Not forgetting the ongoing COVID, the quality of air and after effects of the pollution caused by our activities need to be addressed and all the young generations should be educated to mitigate all negative impact.

**Mahalingpur** or **Mahalingapura** in **Kannada** is a town of **Bagalkot district** in the **Indian state** of **Karnataka**. Agriculture, weaving and jaggery production are the primary industries here. In the past, town was called as Naragatti. Later renamed as Mahalingpur after the gracious appearance of Lord Shri Mahalingeshwara. People speak typical Kannada, understand English and Hindi. The town is known for its picturesque surroundings and pleasant climate. The Ghataprabha River flows through nearby Nandagaon village from its source, which lies to the southwest of the town, and in Kudala sangama gets merge with Krishna. Mahalingpur is one of the major commercial towns in the Bagalkot district. Jaggery and Saari's are common export marketing stuffs here.

Mahalingpur Town Municipal Council, with population of about 36 thousand is Bagalkot district's one of the most populous town municipal council located in Bagalkot district of the state Karnataka in India. Total geographical area of Mahalingpur town municipal council is 9.8 square km's and it is the biggest city by area in the district. Population density of the city is 3679 persons per square km's. There are 23 wards in the city, among them Mahalingpur Ward No 20 is the most populous ward with population of 3083 and Mahalingpur Ward No 08 is the least populous ward with population of 291.

Nearest railway station is Kudchi which is 45 km far from here and Chikkodi road railway station, which is around 46 km far from here. District head quarter of the city is Bagalkot which is around 90 km away. Bangalore is the state head quarter of the city and is 610 km far from here. Yearly average rainfall of the city is 712.10 mm. Maximum temperature here reaches up to 39.40°C and minimum temperature goes down to 11.55°C.

<https://en.wikipedia.org/wiki/Mahalingpur>

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All the discussions in the report evolve around the social existence of the citizens, the economic contribution factors, The industrial establishment and opportunities for entrepreneurship.

#### Education.

Bagalkot district has a number of educational institutions, including Basaveshwara Vidya Vardhaka Sangha, KLE's, BLDE's and Sakri Sangha. A number of colleges are affiliated with Rani Channamma University, Belgaum, Visvesvaraya Technological University, Rajiv Gandhi University of Health Sciences, Ramanagara. Basaveshwara Engineering College (BEC) was established in 1963. S Nijalingappa Medical College, HSK (Hanagal Shree Kumareswar) Hospital and Research Centre, Bagalkote is affiliated with Rajiv Gandhi University of Health Sciences.

The University of Horticultural Sciences (UHS) is headquartered in Navanagar, Bagalkote with its constituent colleges spread across the state.

#### Economy.

Agriculture is the largest employer in Bagalkot, with over 65% of the working population engaged in it; approximately 80% of female workers in Bagalkot are engaged in agriculture. Like most of north Karnataka, Bagalkot is very rich in black soil which is conducive to the cultivation of cotton. Bagalkot's economy was valued at US\$5.6 billion, making it the 12th largest economy in Karnataka. The approximate per capital income is ₹26000/-. The chief crops cultivated are rabi and jowar, as well as groundnut, cotton, maize, bajra, wheat, sugarcane and tobacco. Jowar is largely cultivated because it can be grown during rainy seasons as well as during the winters. The crop also is the chief supply of food for the people. Pulses are also grown in the region, primarily tuvar daal, gram, kulith and munga daal. Castor oil, linseed and sesamum are also grown in Bagalkot. Water supply for irrigation includes reservoirs such as the Kendur reservoir, which is six miles from Badami and the Muchkundli reservoir, which is 4 miles from Bagalkot. Famine due to lack of

#### FACTOR CONSIDERATION.

Source : [https://en.wikipedia.org/wiki/Bagalkot\\_district](https://en.wikipedia.org/wiki/Bagalkot_district)

Keeping civilized and self-sustainable growth contribution, all discussions in the report are based on the factors driving the civilization of the city and the nearby areas and their work culture.

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adequate rains is quite common in Bagalkot. A famine that struck the region in 1901 inflicted considerable financial loss to the agricultural industry in Bagalkot. The district has the fifth highest farmer suicide rate in Karnataka.<sup>[18]</sup> Efficient water management techniques and government sops have only marginally mitigated the repercussions of the drought stricken district.

A sizable proportion of the population also consists of weavers. The chief manufactures are cotton and silk cloths. Large quantities of cotton yarn are also dyed and exported to other parts of the state and country. Most of the immigrants in the district are either money lenders or cloth merchants.

#### Industries.

The focus sectors include agriculture, cement, sugar-based industries, silk and handloom industries.




It is one of the two handloom units (other is Dharwad) in India from where woven khadi is obtained and transported to Karnataka Khadi Gramodyoga Samyukta Sangha based in Hubli (which is the only licensed flag production and supply unit in India).

Many new industries are planning to begin in Bagalkot. New cement industries have been registered and are waiting for the permission to begin. There are other small-scale industries like Cement Pipe Industry which produce cement pipes, Bangle Industries which produce bangles, Match Stick Industries, Agarbatti Industries, Plastic Bag Industries etc. in Bagalkot. At the outskirts of Bagalkot city there are many small-scale industries set up. These come under the Vidyagiri area of Bagalkot city, which is the latest extension of the city. Small-scale industries like Ceramic Tile Industry, tyre industry, Stone Cutting And polishing Industry, milk Dairy etc. are running successfully. At Gaddanakeri there are many limestone industries and brick industries. The limestone industries produce lime for whitewash and painting. The brick industries produce bricks required for the construction of houses. There are local oil industries and oil refineries which produce oil from groundnuts, sunflower, sesamum orientale, cotton etc.

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BAGALKOT WEATHER BY MONTH // WEATHER AVERAGES

Bagalkot	
<u>City</u>	Coordinates:  16.1817°N 75.6958°E <u>Coordinates:</u>  16.1817°N 75.6958°E
 <p style="text-align: center;">Bagalkot Location in Karnataka, India</p>	<b>Country</b> <u>India</u>
	<b>State</b> <u>Karnataka</u>
	<b>Region</b> <u>Bayalussame</u>
	<b>District</b> <u>Bagalkot</u>
	<b>Government Type</b> <u>City Municipal Council (CMC)</u>
	<b>Body</b> <u>Bagalkot CMC &amp; BTDA</u>
	<b>Total Area</b> <u>49.06 km² (18.94 sq. mi)</u>
	<b>Elevation</b> <u>537.08 m (1,762.01 ft)</u>
	<b>Total Population (2011)</b> <u>112,090</u>
	<b>Density</b> <u>2,183/km² (5,650/sq. mi)</u>
	<b>Demony(m)s</b> <u>Bagalkotiens</u>
	<b>Official Languages</b> <u>Kannada</u>
	<b>Time zone</b> <u>UTC+5:30 (IST)</u>
	<b>PIN</b> <u>587101-105</u>
<b>Telephone code</b> <u>08354</u>	
<b>Vehicle registration</b> <u>KA-28, KA-48</u>	
<b>Website</b> <u>bagalkot.nic.in</u>	

**THOUGHT FOR EVERY MOMENT**

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 986 tonnes of paper will be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year,  
**SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.**

Precipitation / Rainfall (mm)	Max. Temperature (°C)	Min. Temperature	Avg. Temperature (°C)	Month
0	30.2	16.8	23.5	January
3	32.5	18.3	25.4	February
5	35.2	20.8	28	March
30	36.2	22.7	29.4	April
66	35.7	23	29.3	May
80	30.9	22	26.4	June
113	28.3	21.5	24.9	July
87	28.5	21.3	24.9	August
145	28.4	21	25.2	September
124	30.3	20.6	25.4	October
24	29.5	18.4	23.9	November
6	29	16.5	22.7	December

Data: 1982 - 2012

The difference in precipitation between the driest month and the wettest month is 145 mm | 6 inches. The variation in temperatures throughout the year is 6.7 °C | 44.1 °F.

Source : <https://en.climate-data.org/asia/india/karnataka/bagalkot-51062/>

**Average annual rainfall recorded is around 683mm.**

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**KLE Society's  
SCP Arts, Science & DDS Commerce College,  
Tq: Mudhol, Mahalingpur, Dist: Bagalkot**

**List of Staff Members for Criterion VII**

Sl.No	Name	Designation	Department
1.	Dr. B. M. Patil	Principal	Kannada
2.	Dr. A. M. Chinagundi	Convenor	Kannada
3.	Dr. G. N. Patil	Member	Economics
4.	Smt. S. S. Murari	Member	Physics
5.	Smt. R. S. Munnolli	Member	Commerce
6.	Shri. P. V. Alagouda	Member	Chemistry

**List of IQAC Members**

Sl.No	Name	Designation	Department
1.	Dr. K. M. Awaradi	Coordinator	Agri- Marketing
2.	Dr. S. D. Soraganvi	Assistant Coordinator	Economics

**List of Physically Handicapped Students**

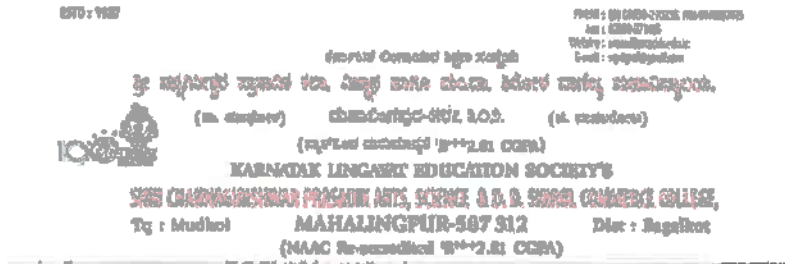
Sl.No	Name	Class
1.	L. P. Janawad	B.A I
2.	A. P. Navi	B.A I
3.	S. S. Kanasageri	B.A I
4.	P. S. Saidapur	B.Com III

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**ACKNOWLEDGEMENT:**

SUNSHUBH TECHNOVATIONS PVT LTD., is pleased to express its sincere



gratitude to the management of SCP ARTS AND DD SHIROL COMMERCE COLLEGE @ MAHALINGPUR., for entrusting SUNSHUBH

ಆಧಾರ್ ಸಂಖ್ಯೆ: 24/...621.../2015-10  
To,  
Sunshubh Technovations Pvt Ltd.  
Hubli.

ಸಂಖ್ಯೆ: 7123204

Subject: Confirmation of Green Audit, Energy Audit and Environment Audit Services regarding..

Dear Sir,

1. I'm happy to intimate that KLE's SCP Arts, Science & DDS Commerce College, Mahalingapur has agreed to your proposal for Green auditing, Energy auditing and environment auditing services. We are bound to pay your proposal along with allied charges. Here by we have confirmed your services for Green auditing, Energy auditing and environment auditing services. The College is eagerly waiting for your valuable services.
2. Your services will enhance of aesthetic beauty of our college.
3. This is for your kind information and further necessary action.

Thank you

GRADE-I PRINCIPAL  
KLE Society's  
C.P Arts & D.D.A Commerce College,  
MAHALINGPUR-587312 (Karnataka)

TECHNOVATIONS PVT LTD., with the assignment on Green Earth practices based on Educate, Practice, Advocate & Manage the resources in their educational organization.

We also wish to thank the officials and the maintenance staff for the help rendered during the energy flow study.

We would fail if we

neglect to appreciate the sincere efforts put in by the 7<sup>th</sup> Criteria Team lead by the able and motivating Principal Dr. B. M. Patil (Principal), and the Students who against all odds have kept the college premises clean to the possible limits. Without the crucial and significant support from the fellow teaching team the energy savings and carbon footprint reduction would not be a reality.

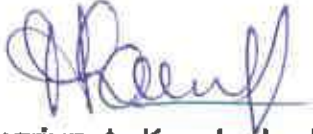
With the motivational support of the management, ground realistic support from teaching team and sincere efforts of the students in incorporating the change (habits) and instructions, the college could effectively declare the reduction in Carbon footprint and optimize the waste reductions.

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We are not in a position to compute the carbon foot print at this point of time as the basic information from each of the students is yet to be collected; however, we will discuss the Carbon Foot print in the follow up compliance report.

Wishing the team a great success we deeply express our gratitude and heartfelt "THANKYOU" for allowing us to assess the energy flow scenario there by the ENERGY STATUS.



Mallikarjun A. Kambalyal. B.E.(E&C).  
Certified Energy Auditors (EA-3485)  
SUNSHUBH TECHNOVATIONS PVT LTD.,



**THOUGHT FOR EVERY MOMENT:**

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### **1. LIMITATIONS:**

Our recommendations are in the interest of conservation of Electrical Energy and Green Culture i.e. the reduction in CARBON FOOTPRINT. The compliance to the recommendations will be subjected to meeting the safety and Environmental rules and guidelines.

### **2. AUTHENTICATION & DATE OF GREEN AUDIT:**

This GREEN Audit has been carried out on 7<sup>th</sup> Jan 2020 under the instructions of Dr. B. M. Patil. Principal. and in the presence of Dr. A. M. Chinagundi and Smt. R. S. Munnolli.

### **3. ABOUT GREEN AUDIT:**

KLE's SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR has asked SUNSHUBH TECHNOVATIONS PVT LTD., Hubli., to conduct the Green Audit for their Institution.

In this context, the management of the Institute represented by Dr. B. M. Patil. Principal., interacted with us for the feasibility to reduce energy consumption and adopt green habits.

SUNSHUBH TECHNOVATIONS PVT LTD., represented by Mr. Mallikarjun A. Kambalyal made a detailed study and readings of various appliances were taken in presence of the officials and carried out the GREEN audit along with the safety parameters.

Based on the information available and the requirements put before us, it was decided to submit the report placing preference on conservation over efficiency.

We hope the points presented will be self explanatory, if there is need for any clarification, we are open for discussions.

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**LIST OF INSTRUMENTS:**

During the process of the Audit, the following lists of Instruments were used.

Sr No.	INSTRUMENT	MAKE	APPLICATION
1	Digital Power Analyser (PC Interfaced)	SCHIVAN ARNOX	Electrical Machinery.
2	Accessories -3000 Amps	ARNOX	Higher load UPTO 3000 Amps,
3	Accessories -200 Amps	ARNOX	UPTO 200 Amps,
4	Thermal Imager	FLIR	Identify loose contacts and bearing losses
5	Power Analyser (Manual)	MECO	Electrical Machinery.
6	Infrared Thermometer	METRAVI	Thermal (Fuel) Energy.
7	Digital (Contact) Temperature & Humidity Meter.	METRAVI	Electrical Machinery. (A/C's And Cooling Towers)
8	Digital Tachometer	METRAVI	Electrical Machinery.(A/C's And Cooling Towers)
9	Lux Meter	METRAVI	General & Task Lighting.
10	Sound Level Meter	METRAVI	Electrical Machinery. Generator Sound Proofing
11	Digital Anemometer	METRAVI	Electrical Machinery.(A/C's And Cooling Towers)
12	Digital KW Meter	METRAVI	Electrical Machinery.
13	Digital Power Factor Meter	METRAVI	Electrical Machinery.
14	Lap Top Computer	HP	To Interface The Instruments For More Accurate - Sophisticated Readings In Sensitive Equipments.
15	Ultrasonic flow meter		Measure liquid flow.
16	Portable Vibration Meter.	METRAVI	Effect Of Filtration - Sewing System. Structural Stability

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17	Live cable detector probe	-	Detect hidden cables for safety audit.
18	Power Analyser – EMM 5	Beluk	For remote communication and detailed audit.
19	Power Analyser – ELITE PRO	Beluk	Power Analyser.
20	ETV meter, KWh & PF meters for site recording.	Secure	
21	PT's for Transformer audits.	KALPA	On field auditing of transformer loading and imbalance evaluation.

Only appropriate instruments will used wherever necessary.

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4. **ONGOING STATUS:**

It's an optimistic & highly dedicated team effort lead by the Principal & the senior staff who have dedicated all their wits & free time to initiate Green Carpet the entire college premises. It is also a fact that there do exist few short comings which however is unintentional & on being trained & educated the campus should look for continued minimized waste generation. With all due appreciation to the management , staff involved & co operation by the students, we have made few suggestions which on implementation, will reduce, demand for water & electrical power. It will also reduce the existing level of pollution to bear minimum.

**NO WASTE – NO POLLUTION – NO HEALTH HAZARD.**

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## DISCUSSIONS ON EXECUTIVE SUMMARY.

### GREEN AUDIT - Observations/Recommendations.

The institute has many short comings in meeting the requirements of the Physically challenged people. The college to setup a committee on immediate basis and come up with the action plan.

The check list is enclosed for compliance in line with the NAAC requirements under the 7<sup>th</sup> Criteria.

### Disabilities for Differently Abled.

*This section needs to be self-evaluated by constituting an internal team.*

*The corrective measures would take time but a move towards the implementation would be appreciated.*

*NAAC co-ordinating team may please look into the aspects and act.*

Need to form an inhouse committee on making the campus disabled friendly. A clear task is necessary and the required check list is presented for compliance. Before we conduct check on compliance,

### A Brief note on Green Audit.

Please refer to <http://www.disabilityindia.co.in/> for more information.

The green audit primarily lays focus on Energy use, its impact on environment and remedial measures.

It is equally focused on ways of making life of differently abled persons easy and readily adoptable to changing working environment.

Every citizen has to feel self-sufficient on economic front and self-reliant on meeting his daily chores.

While we have discussed elaboratively on Energy and Environmental aspects in the connecting audit reports, let us understand how we can focus on making differently abled life more meaningful Thus, the special focus.

### Disabilities for Differently Abled.

In order to develop awareness in the higher education system and also to provide necessary guidance and counselling to differently-abled persons, it is expected that the Institutes

Facilitate admission of differently-abled persons in various courses.

Provide guidance and counselling to differently abled individuals.

Create awareness about the needs of differently abled persons and other general issues concerning their learning

Assist differently-abled graduates to gain successful employment in the public as well as private sectors.

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## THE MAJOR FUNCTIONS OF THE INSTITUTION SHOULD BE,

- To provide counselling to differently - abled students on the types of courses they could study at the higher education institutions.
- To ensure admission of as many differently-abled students as possible through the open quota and also through the reservation meant for them.
- To gather orders dealing with fee concessions, examination procedures, reservation, policies, etc., pertaining to differently-abled persons.
- policies, etc., pertaining to differently-abled persons.
- To assess the educational needs of differently abled persons enrolled in the higher education institutes to determine the types of assistive devices to be procured.
- To conduct awareness programmes for teachers of the institute about the approaches to teaching, evaluation procedures, etc, which they should address in the case of differently-abled students.
- To study the aptitude of differently-abled students and assist them in getting appropriate employment when desired by them after their studies.
- To celebrate important days pertaining to disability such as the World Disabled Day, White Cane Day, etc., in the institute and also in the neighbourhood in order to create awareness about the capabilities of differently-abled persons.
- To ensure maintenance of special assistive devices procured by the higher education institute under the HEPSN scheme and encourage differently-abled persons to use them for enriching their learning experiences.
- To prepare annual reports with case histories of differently-abled persons who are benefited by the HEPSN scheme sanctioned to the higher education institute.

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### Providing Access to differently-abled persons

It has been felt that differently-abled persons need special arrangements in the environment for their mobility and independent functioning. It is also a fact that many institutes have architectural barriers that disabled persons find difficult for their day-to-day functioning. The colleges are expected to address accessibility related issues as per the stipulations of the Persons with Disabilities Act 1995, and ensure that all existing structures as well as future construction projects in their campuses are made disabled friendly. The institutes should create special facilities such as ramps, rails and special toilets, and make other necessary changes to suit the special needs of differently-abled persons. The construction plans should clearly address the accessibility issues pertaining to disability. Guidelines on accessibility laid out by the office of the Chief Commissioner of Disabilities.



### Providing Special Equipment to augment Educational Services for Differently abled Persons

Differently-abled persons require special aids and appliances for their daily functioning. These aids are available through various schemes of the Ministry of Social Justice and Empowerment. In addition to the procurement of assistive devices through these schemes, the higher education institute may also need special learning and assessment devices to help differently-abled students enrolled for higher education. In addition, visually challenged students need Readers. Availability of devices such as computers with screen reading software, low-vision aids, scanners, mobility devices, etc., in the institutes would enrich the educational experiences of differently-abled persons. Therefore, colleges are encouraged to procure such devices and provide facility of Readers for visually challenged students.

### Internal audit guidelines.

#### Audit Process

This section discusses the planning and Implementation of the actual audit. The planning for the audit should cover:

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- The core audit team
- Media management
- Overall coordination

### **The Core Audit Team**

- The audit team should assemble outside the venue in advance to discuss the process of the audit.
- The attendance sheet should be signed by all the members of the assembled team.
- The team members should know the parts of the building they are to audit.
- The appropriate part of the audit checklist should be used for each section of the building audited. It is important to address each item of the checklist.
- The group should assess the area taking all kinds of disability into account.
- The photographer must be briefed and be guided by a member of the core audit team.
- The results of the different parts of the audit must be compiled.
- The audit team should meet the authorities of the organization, with the media, to inform them of the findings of the audit and submit a representation. The team must get a commitment to incorporate the changes necessary to make the building disabled-friendly.

### **Media Management**

The media members should be asked to assemble at one place from where they will be transported to the venue of the audit or they should assemble at the site of the audit. A person must be appointed to coordinate with the media. A press briefing should be held and the media provided with a press kit. The media must be invited to join the team when it submits its representation to the head of the organization.

### **Overall Coordination**

Since the audit process involves many people, a well-defined programme for the audit has to be drawn up. The following must be kept in mind:

- A schedule. A person should be nominated to monitor adherence to the planned programme.
- A designated Coordinator for overall synchronization of the audit goals

The following items must be carried by the audit team:

- copies of the audit checklist
- pens and hard boards
- attendance sheets
- copy of The Disability Act, 1995

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- awareness materials
- copy of the representation to be submitted to the organization audited
- press kits

### Post Audit Reporting And Follow-Up

The reporting of the audit is in 2 parts:

- a. Report on the building being audited, for submission to the organization which houses the building; and
- b. Complete report containing all the details relevant to the entire audit exercise.

### Reports To Be Submitted To The Organization Audited

The data collected during the audit must be compiled and a report must be prepared. The report would be based on the following points:

- name of the place audited
- date of the audit
- members of the audit team
- observations on the areas audited, and the main conclusions of the audit
- suggestions for short-term and long-term improvement, based on the CPWD guidelines
- follow-up guidelines

A time-frame can be suggested for adopting the suggested changes. This report must be handed over to the audited organization, with a letter of appreciation for courtesies and cooperation extended, a copy of the completed audit checklist used to audit the institution and a copy of the relevant CPWD guidelines (sample formats)

### Report Of The Access Audit Project

A report of the audit itself must be drawn up. It should include the aims, the details of the audit process, i.e., the pre-audit preparation, the process itself and the post audit reporting and follow-up, including the results of the audit and suggestions for improvement, which have been made. The report should include photographs and copies of news clippings of the audits. This report must be archived for future reference and follow-up action.

### Brief Description Of The Essentials Of A Building That Are Evaluated

#### Entrances/Exits

The main entrances and exits of buildings must be clearly identifiable and easily accessible. They must be wide enough to accommodate wheelchair users. Steps and ramps must have hand railings of contrasting colours. Building should have automatic sliding doors. In multistorey buildings, the entrance should permit access to a conveniently located elevator. Emergency exits should be easily identifiable and accessible.

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## Parking

Parking for people with disabilities should be available near the building. It should be accessible to cross-disability groups equally. Accessible indoor parking spaces should be located closest to the elevators and within 50 metres of building entrance. The parking slots reserved for people with disabilities should be marked with the international symbol of accessibility. There should be procedures in place to make sure that non-disabled people do not use parking spaces reserved for people with disabilities. Drop off areas should be marked by a well-defined signage system and an accessible travel path from this area to the building should be available.

## Ramps

Complementary ramps should be available next to stairs. The gradient of ramps should allow easy use by wheelchair users. Appropriate landings should be available and the ramps should be wide enough for use by wheelchair users. Ramps surfaces should be slip-resistant and clear of obstacles. They should be protected on both sides. Ramps should be marked with the international symbol of accessibility.

## Elevators

Elevators should be easily accessible and identifiable. The doors should be wide enough to accommodate wheelchair users and the space inside should be sufficient for them. Elevators should have handrails of contrasting colours on three sides and be at appropriate heights. Visual and audible signals indicating the arrival at different floors should be available. Emergency intercoms should be usable without voice communication in emergencies. Tactile/ Braille instructions should be provided for the communication systems.

## Stairs

Stairs should be easily accessible and identifiable. The minimum width of the stairs should be wide enough and the landings have enough space at the top and bottom. The stair surfaces and nosing should be slip resistant. Handrails should be provided for staircases.

## Corridors

The minimum unobstructed width of corridors should be wide enough for wheelchair users and should allow manoeuvring through doors along the length of the corridor. The corridors should have guiding blocks along its length.

## Washrooms, Toilets And Bathrooms

Separate toilets should be available for people with disabilities. They should be clearly identifiable and accessible. The doors should be wide enough and should be lockable from inside and releasable from outside. There should be enough manoeuvring space inside. All floor surfaces should be slip resistant. Mirrors, flushing arrangements, dispensers and toilet paper should be mounted at appropriate heights. They should be equipped with alarm systems for emergencies.

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### **Public Telephones**

There should be at least one telephone accessible to wheelchair users and should be equipped with hearing aids. The numbers should be embossed to allow easy identification. The coin slots should be at appropriate heights.

### **Counters**

This includes reception counters, ticket counters, cash counters and administration counters. Counters should be easily identifiable and accessible to wheelchair users. Counter staff should be able to communicate with persons with hearing and visual disabilities.

### **Drinking Water Facilities**

They should be easily accessible and the fountain head accessible to wheelchair users.

The area around the fountain should be dry to prevent falls. Glasses should be provided at drinking water facilities. The taps should be easily manoeuvrable.

### **Eating Outlets**

Accessibility of eating outlets for people with various kinds of disability must be assessed. Tables, service counters and cash counters should be at appropriate heights. There should be enough place inside for easy movement by wheelchair users. A menu card should be available in Braille. Facilities should be available for people with speech impairment to place orders.

### **Audit Of Specific Areas Of Buildings**

Some buildings have areas specific to them and different aspects must be looked when auditing them.

### **Hospitals**

Patients have to visit the examination and sample collection rooms of hospitals and may get admitted to wards in them.

### **Examination Rooms**

Examination rooms should be easily identifiable and accessible. The examination tables should be of the right size and height.

### **Sample Collection Rooms**

Sample collection rooms should be easily identifiable and accessible. The rooms should be large enough to enable easy mobility within them. The toilets attached to sample collection rooms should be easy to use. The sample collection tables should be easily accessible.

### **Wards**

Wards should be easily identifiable and accessible to people with different disabilities. Space in wards should allow easy mobility by wheelchair users. All fixtures should be at accessible heights. They should be obstacle free. Guiding lines should be available for people with visual impairment.

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## **Banks**

All counters should be easily identifiable and accessible. Counters should be at appropriate heights. The staff at the counters should be able to communicate with people with hearing impairments. The manager's office should be easily identifiable and accessible. Various forms should be placed at accessible counters and space should be available for the clients to fill the forms easily.

Automatic Teller Machines (ATM) should be easily accessible to clients with various types of disability. They should be placed in areas, which allow mobility for wheelchair users. They should be slip resistant and have grab bars.

## **Hotel Rooms**

At least one room easily accessible should be located on the ground floor to enable rapid evacuation in case of emergencies. The room should be equipped with an alarm system. All fixtures and controls should be at accessible heights. The space in the room should allow mobility for a wheelchair user. The windows should allow unobstructed viewing for wheelchair users. Room facilities, like phones, fire alarms, wake-up alarms, etc., should be accessible to people with different disabilities.

## **Cinema Halls**

Tickets counters and the hall should be easily accessible. Specific seats should be allocated to wheelchair users.

## **Government Offices**

The public areas should be accessible to people with different disabilities. The counter staff should be able to guide people with different disabilities. Letter boxes should be accessible.

## **Historical Sites**

The site details should be available in Braille. Trained guides should be available for people with different disabilities. Shops should be accessible.

### **The Disability Access Audit Checklist**

The disability access audit checklist includes details that have to be looked into for carrying out a disability access audit. They must be completely and accurately filled out to carry out a meaningful audit.

The checklist has been divided into two parts. Part 1 (A to K) is for areas common to all buildings audited, while Part 2 (L to Q) deals with areas specific to locations, like banks, cinema halls, etc. It is non-exhaustive and should be adapted to specific needs.

The checklist must be filled in by answering "yes", "no", or "not applicable" to the questions. Observations made in the remarks column during the audit will determine how disabled friendly a location is.

Indicative In-house check list for disabled friendly persons.

## **Check list for Compliance**

DISABILITY ACCESS AUDIT CHECKLIST

### **THOUGHT FOR EVERY MOMENT**

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 988 tonnes of paper will be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year,  
**SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.**

Date of audit:		
Staff In charge		
Department:		
Audited by (organization):		
General Remarks & Suggestions:		
Name of the team leader and Signature		
<b>A</b>	<b>ENTRANCE</b>	
<b>1</b>	<b>Before main entrance</b>	
(i)	Are there steps?	Yes/No*. If yes, how many?
(ii)	Does the steps have railings?	Yes/No*. If yes, one/both sides?
(iii)	Is there a ramp? Does the ramp have railings?	Yes/No*
(iv)	Does the ramp have an edge protection?	Yes/No*. Width?
<b>2</b>	<b>Main Entrance</b>	
(i)	Is the width of the entrance greater than or equal to 900mm?	Yes/No*. Width?
(ii)	Type of door	Automatic/Swing/Sliding*
(iii)	Type of door handle (if applicable)	Lever/Knob*
(iv)	Is the height of the door handle between 900mm-1100mm?	Yes/No*. Height of Kerb:
(v)	Is there a kerb at entrance?	Yes/No*. Gradient:
(vi)	Is there a kerb ramp?	Yes/No*.
(vii)	Is there the International Symbol of Access (Disabled Logo) displayed?	Yes/No*.
<b>3</b>	<b>Side Entrance</b>	
(i)	Location (e.g., along Halg Road) (if there is more than one location, please specify all)	Yes/No*. If yes, location at
<b>4</b>	<b>Side Entrance</b>	
(i)	Is the width of the entrance greater than or equal to 900 mm?	Yes/No*. Width:
(ii)	Type of door	Automatic/Swing/Sliding*
(iii)	Type of door handle (if applicable)	Lever/knob*
(iv)	Is the height of door handle between 900 mm - 1100 mm?	Yes/No*. Height of kerb:
(v)	Is there a kerb at entrance?	Yes/No*. Gradient:
(vi)	Is there a kerb ramp?	Yes/No*.

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	indicated the location of the parking lot for the disabled person?	
5	Size of parking lot. (Min. Size: 4800 mm x 3600 mm)	Dimension:
6	Please provide information on accessibility from the parking lot to the lift lobby/building entrance.	Please tick on the box and delete accordingly for the following: There is kerb/no kerb at the Entrance of the lift lobby. There is a kerb ramp at the Entrance of the lift lobby. Gradient: There is a swing/automatic/ Manual* door leading to the main building Width of door entrance is at least 900 mm wide Width: Corridor width is at least 1200 mm wide Width: Width of lift door is at least 900 mm wide Width: State the type of flooring used:
<b>C Taxi Stand</b>		
1	Is there a taxi stand at the building? If yes, please state the location (e.g., at the main entrance)	Yes/No*. Location:
2	Is there a kerb at the taxi stand?	Yes/No*.
3	Are these one/two kerb ramps for boarding and alighting the taxi?	One/Two* Kerb Ramps Ramp for Boarding. Yes/No*. Ramp for Alighting. Yes/No*.
<b>D Lift</b>		
1(i)	Is the lift accessible to every floor?	Yes/No*.
(ii)	Is there an accessible path leading to the elevator?	If no, please specify which floor(s) the lift stops on:
(iii)	Is the elevator door easy to identify?	If no, please specify which floor(s) the lift stops on:
2	Is the clear door opening width more than 900 mm?	Yes/No*. Width:
3(i)	Is the height of the call button (outside the lift) between 900 mm-1100 mm?	Yes/No*. Height between:
(ii)	Is the space inside the elevator enough?	Yes/No*. Height between:
4	Is there an audio system installed (talking lift) for the lift?	Yes/No*.
5	Are there Braille/raised (for the visually impaired persons) numbers used on the control panel?	Yes/No*. Height between:
6	Is the control panel placed at a height of between 900 mm - 1200 mm from the floor level	Yes/No*. Height between:

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7(i)	Are there grab bars inside the lift?	Slides: Yes/No*.
(ii)	Are the doors and handrails of the elevator of contrasting colour?	Slides: One/Both* Rear: Yes/No*.
8	Are the grab bars placed at height of 900 mm from the floor?	Yes/No*. Height:
9	Is the emergency intercom usable without voice communication?	Yes/No*.
10	Is the door opening/closing interval long enough?	Yes/No*.
11	Is the floor of the elevator non-slippery?	Yes/No*.
<b>E</b>	<b>Public Telephone</b>	
1	Are there public telephones for the disabled person. If yes, provide location (e.g., level 1,2)	Yes/No*. Location:
2	Is the height of the operable parts (highest and lowest) of the public Phone between 800 mm-1200mm	Yes/No*. Actual height between:
3	Is there a clear knee space of more than 680 mm	Yes/No*. Actual clear knee space:
4	Is there at least one telephone equipped with hearing aids?	
5	Are the numerals on the telephone raised to allow identification by touch?	
6	Is the coin slot mounted at an appropriate height?	
7	Are accessible facilities identification?	
<b>F</b>	<b>Counters</b>	
1	Is the counter easily identifiable?	
2	Is the level of the counter accessible?	
3	Is the staff able to communicate with people with visual, hearing and speech impairment?	
4	Is the staff supportive to mentally-challenged clients?	
<b>G</b>	<b>Public Toilets</b>	
1(i)	Are there separate toilets for the disabled person? Is the accessible toilet identified by a sign?	Yes/No*.

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(ii)	Is the entrance to the public toilet accessible to people with disabilities?	Yes/No*.
(iii)	Is the width of the door wide enough?	Yes/No*.
(iv)	Is there enough manoeuvring space in the toilet?	Yes/No*.
2	Are the toilets for the disabled person available on every floor?	Yes/No*. If no, specify on which floor they are available
3	What type of toilets is provided?	Individual/Compartment/Both*
4	Are the measurements of the toilet for the disabled person the same (if there are more than one toilet)?	Yes/No*.
5	<p>If the toilets for the disabled persons are different from one another, please complete separate copies for each toilet surveyed</p> <p>Sketch toilet surveyed (include door, water closet, wash basin, door and grab bars)</p>	<p>State location of toilet checked</p> <p>Please tick on the box and delete accordingly for the following</p> <p>Individual washroom/compartment *</p> <p>Individual washroom: Have clear dimensions between opposite walls of not less than 1750 mm. Actual dimension: mm x mm</p> <p>Water Closet Compartment Have clear dimensions of not less than 1500 mm by 1750 mm Actual dimension: mm x mm</p> <p>Door width more than 900 mm Actual width:</p> <p>No kerb/kerb ramp* at the Entrance to the toilet. If there is a kerb ramp, the gradient is:</p> <p>Door handles are located: Inside/Outside/Both sides*</p> <p>Door opens outwards / Inwards*</p> <p>Door is a swing / folding / sliding* door</p> <p>One horizontal grab bar is mounted at a height of between 280 mm and 300 mm from the top of the water closet seat and one horizontal grab bar is mounted on the side wall closet to the water extending from the rear wall to at least 450 mm-in-front of the water closet seat.</p> <p>Actual height: Actual height:</p> <p>Water basin has a clear knee Space of at least 750 mm wide by 200 mm deep by 680 mm high</p>

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		<p>with an additional toe space of at least 750 mm wide by 230 mm deep by 230 mm high.</p> <p>Actual clear knee space: (W) x (D) (H)</p> <p>Water closet is located between 460 mm - 480 mm from the centreline of the water closet to adjacent wall. Actual distance:</p> <p>Clear dimension of 750 mm from the front edge of the toilet bowl to the rear wall. Actual distance:</p> <p>The passage way leading to the cubicle is at least 900 mm. Actual width:</p>
6	Is there at least one accessible shower?	
7	Are grab bars installed in bathtubs and showers at an appropriate height?	
8	Are accessible showers equipped with shower seats?	
9	Are the grab bars slip resistant?	
10	Can grab bars withstand load?	
11	Is the mirror at an appropriate height?	
12	Is the rest room equipped with an alarm system accessible to people with different disabilities?	
13	Are flushing arrangements, toilet paper and other dispensers mounted at an appropriate height?	
14	Are flushing mechanisms easy to operate?	
15	Are the doors lockable from inside and released from outside in emergency situations?	

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H		Drinking Water Facility	
1	Is the water tap easily accessible?		
2	Can it be easily manoeuvred by a person with poor hand function?		
3	Is the area dry?		
4	Are glasses provided?		
I		Cafeteria	
1	Is there an eating outlet located within the building?	Yes/No*.	Location
2	Is the eating outlet generally accessible to the disabled?	Yes/No*.	
3	Is there a circulation path/passageway of at least 900 mm wide to allow the wheelchair user to move around the eating outlet and order their food?	Yes/No*.	
4	Is there a table reserved for the disabled?	Yes/No*. If no, give details of seating arrangements:- Height of table-top not higher than 800 mm with a minimum clear knee of 700 mm x 480 mm deep. If no, provide Measurement: Table-top: Clear knee space: x  Table with fixed stools/chairs Table without fixed stools/chairs	
5	Are there directional signs to lead the disabled person to the reserved table?	Yes/No*.	
6	Is there enough leg clearance space below the table?	Yes/No*.	
7	Is the height of the table appropriate?	Yes/No*.	
8	Is the height of the cash counter appropriate?	Yes/No*.	
9	Is there a menu card available in Braille?	Yes/No*.	
10	Is there a facility for a person with speech	Yes/No*.	

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	Impairment to be able to place an order?	
11	Do the tables have straight legs?	Yes/No*.
J	Staircase	
1	Applies to flights of steps Check the following:	State where the staircase is located:
2	Are there handrails	Yes/No*. If yes, one/both sides
3	Height of hand rails between 800 and 900 mm from the floor	Yes/No*. Actual height:
4	Are the handrails continuous	Yes/No*.
5	Is there a levelled platform at the top and bottom step extending not less than 300 mm (with railing)	Levelled platform: Yes/No*. Extended railing: Yes/No*.
6	Steps specifications	Uniform riser: Yes/No*. Open Riser: Yes/No*. Height of risers: Protruding nosing: Yes/No*.
7	Is the minimum width of the stairs enough?	
8	Is the landing space at the top and bottom of the stairs enough?	
9	Are the stair nosing slip-resistant?	
10	Is the location of the stairs clearly identifiable?	
11	Is a handrail installed?	
12	Do the stairs have guide strips?	
K	Slope Ramps	
	Applies to slope ramps Check the following:	State where the slope ramps are located:
1	Are there handrails	Yes/No*. If yes, one/both sides
2	Height of hand rails between 800 and 900 mm from the floor	Yes/No*. Actual height:
3	Are the handrails continuous	Yes/No*.

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4	Is there a levelled platform at the top and bottom ramp extending not less than 300 mm (with railing)	Levelled platform: Yes/No*.Levelled railing: Yes/No*.
5	Is the width of the ramp at least 1200 mm	Yes/No*.Actual width:
6	Ramp landings are provided at regular intervals of not more than 9000 mm of every horizontal run	Yes/No*.Length of horizontal run:
7	Is an edge protection available	Yes/No*.
8	Type of flooring used	Specify:
9	Describe the condition of the flooring	e.g., levelled, tiles popping up, uneven surfaces
10	Are grating found in the open area	Yes /No*
11	Are the gratings covered?	Yes/No*
12	Are grating placed across the dominant placed across the dominant of travel	Yes/No*
13	Is the width of spaces found between the grating strips less than 12 mm	Width:
	General description of accessibility within the premises	Paths to various locations of Attractions are easy and Accessible.
		Not quite accessible, there are Many obstacles such as
		Quite accessible but there are Steps (manageable).
		Inaccessible in most areas. (please specify)
L	Corridors	
	Is the minimum unobstructed width of the	

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	corridor wide enough for wheelchair users?	
	Does the corridor width allow manoeuvring through doors located along its length	
	Does the corridor have guide strips?	
	Is the corridor pathway obstruction-free?	
	Any other comments:	
	Name of Facilitator(s):	Name of Surveyor(s):

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## Green Pledge templet.

**CARBON HANDPRINT - GREEN PLEDGE**

**CARBON HANDPRINT** is a way to conserve our energy resources, keep the environment clean, follow eco-friendly measures and physically challenged and specially skilled personal's manoeuvrability friendly.

**We the Principal, the Staff and Students, adopt responsible practices in our daily activities with due regard to the environment. We set and continually review objectives and targets for achieving our goal to protect our entire college premises in front, backyard and all other non-approachable areas of all primary and secondary pollutions.**

**We seek to comply with safety and environmental regulations to implement inhouse standards to improve our environmental performance. We commit ourselves to the safe operation of all our working habits, be it in classrooms, library, canteen, on road, off road, in-campus out-campus as well as at our place of stay. We adhere to reduce environmental load by efficiently using resources, saving energy, reducing waste, encouraging material recycle, with special emphasize to minimising emissions of greenhouse gases, ozone depleting substance and particulate matter.**

**We endure to minimise environmental loads and adopt environmentally friendly technologies when ordering and purchasing necessary products and resources. We endure to attend educational programs and promulgate our close friends and colleagues to follow suite. We endure to ensure that we recognize the essence of this Green policy by actively and aggressively conducting workshops and training to all in environmental concepts. We make wide ranging social contribution to close association with the students, teaching staff, administrative staff, housekeeping staff by disclosing environmental information and supporting environmental consumption.**

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## Reduce Carbon Footprint by Cycling

Cycling is usually a low-carbon way to travel – but it depends on what you eat.



and it helps you to Reduce Your Carbon Footprint by Cycling.

The UN climate change report warns that we need to reduce our *carbon footprint* before it's too late. Here's how *bike commuting* can help.

You're probably well aware of cycling's numerous health benefits. But its impact on the planet can make life better and safer for all people, not just individuals aiming for a healthier lifestyle.

That's according to a new report from the UN's Intergovernmental Panel on Climate Change (IPCC). The panel's scientists determined that if the global temperature rises by 1.5°C or more by 2030, the worldwide risk of events like extreme droughts, wildfires, and floods will increase exponentially.

The bad news: If no changes are made, the global temperature could rise by as much as 3°C—double the rate that scientists agree would already be catastrophic. But everyone from governments and large corporations to private citizens can take steps to fight the effects of climate change. The IPCC suggested ways to reduce our carbon footprint—and cycling for transportation is one of them.

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One thing that can be done is cities planning and implementing complete street policies—things like funding infrastructures, building protected bike lanes, and talking to citizens about what would make them feel safe,” Whitaker told *Bicycling*. By using bike lanes other infrastructure to better connect neighborhoods with schools, offices, and shopping centers, she said, cities and towns could encourage more people to ditch their cars and bike instead. This is the best way to Reduce Carbon Footprint by Cycling.



and

is

Taking the leaf off the Harvard university, We suggest that the concept of commute to work be explored. We present the link to understand how the Harvard university encourages and practices.

<https://green.harvard.edu/tools-resources/how/10-tips-harvards-bike-commuting-pros>

#### College - Community Interaction:

The college educates the children on Agri-Marketing. It was interesting to interact with the children and understand how the class room knowledge is being carried to the farming community. Various activities were carried out by the students and after a close discussion, we sought the list.

- We understand that the children got involved in understanding the new Farmer laws that are being talked about and debated widely.
- Avenues available for the farmers to fetch right price for their harvest.
- Means and mechanisms to avoid middlemen in marketing the produce.
- Extending the organic farming knowledge to the farming community.
- Interacting and gathering information from the progressive farmers.

The spontaneous writeup was asked from the students present. The writeup below justifies the community interaction.

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10/03/21

KLE Society's  
S.C.P. Arts, Science & D.D.S Commerce  
College Mahalingpur

Agri Marketing and Economics Activity of  
function.

- \* ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು ಮೇಲೆ ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು
- \* ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು ಮೇಲೆ ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು
- \* ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು ಮೇಲೆ ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು
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ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು ಮೇಲೆ ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು

- \* one day national level Workshop on  
Farm labor 2020.
- \* ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು ಮೇಲೆ ಕೃಷಿ ಕಾರ್ಯಕ್ರಮಗಳನ್ನು
- \* class Seminar

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- \* ARMC Visit.
- \* Co-op market Society Visit.
- \* ಶಿಬಿರಗಳ ಸಭೆಗಳಿಗೆ ಸೇರಿಕೊಂಡು ಕಾರ್ಯಕ್ರಮಗಳಲ್ಲಿ ಭಾಗವಹಿಸಿ
- \* Guest Lecturer Seminars
- \* ಸಮಾಜ ಸೇವೆಗಳಲ್ಲಿ ಸಕ್ರಿಯವಾಗಿ ಭಾಗವಹಿಸಿ.

### ⇒ Agri. Marketing Students

- \* Chandbi Yakund
- \* Shoba Putrot

### ⇒ Economics Students

- Sanjivini Ullagaddi
- Preeti Kakade
- Maheshwari Kasisabji

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**Use of Natural Resources:**

The institute has taken good initiatives in incorporating various measures to adopt to new technologies available.

The institute has started use of LED lights. At places where they are not in use, they are planned to be replaced by LED lights as and when they fuse out.

We suggest that the LED replacement project be taken up immediately to put the solar energy into good use.

When replacing the LED lights care should be taken to prevent LIGHT Pollution.

*Light pollution* is the presence of anthropogenic and artificial *light* in the day or night environment. It is exacerbated by excessive, misdirected or obtrusive use of *light*, but even carefully used *light* fundamentally alters natural conditions.

Light pollution is caused by inefficient or unnecessary use of artificial light. Specific categories of light pollution include light trespass, over-illumination, glare, light clutter, and skyglow. A single offending light source often falls into more than one of these categories.

Every day, people are exposed to hours of artificial light from computers, office lights and even 24-hour lighting in hospitals.

Now, new research in animals shows that excessive exposure to "light pollution" might be worse for you than previously known, taking a toll on muscles and bones.

Researchers at Leiden University Medical Center in the Netherlands tracked the health of rats exposed to six months of continuous light compared with a control group of rats living under normal conditions – 12 hours of light, followed by 12 hours of dark.

During the study, reported in *Current Biology*, the rats exposed to continuous light had less muscle strength and showed signs of early-stage osteoporosis. They also got fatter, and some markers of immune system health worsened.

While earlier research found excessive light exposure might affect cognition, the new research showed a surprising effect on muscles and bones.

"Not only did motor performance go down on tests, but the muscles themselves just atrophied, and mice physically became weaker after just two months," said Chris Colwell, a sleep specialist at the University of California-Los Angeles, who was not involved with the study.

The good news is the effects of light exposure appear to be reversible. When the study rats returned to their natural light-dark cycle, their health returned to normal after two weeks.

The data suggest more research is needed into the health effects of artificial light. One concern is the health of patients in hospital intensive care units, people in nursing homes and babies in neonatal units – places where artificial lights often are kept on for 24 hours a day.

"We keep the sickest people in our society under constant light conditions," Colwell said.

The research also might have implications for people exposed to the blue wavelength light emitted from computers, which might be more disruptive to the body than the light that comes from traditional artificial lights.

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## NEED BASED LIGHTING:

### Electrical Safety :

Human safety is the topmost priority in all our aspirations. Electrical infrastructure drives all our aspirations. When quality work is to be delivered all the support mechanism should be in good operating condition. For the system to be in good operating condition, we need to follow certain the regulatory bodies.



The campus lacks this vital fact. We have discussed the situation with site photos. We have also given solutions where necessary. Before we proceed, it is important for all the stake holders to understand few key aspects and why these standards have been specified.

**ACCESSIBILITY:** Electrical hazards are among the most common safety hazards found during compliance, occupational safety and health inspections. Electrical systems in the workplace should have mechanisms in place to protect employees from injury. However, these systems must be maintained properly in order to be effective. Electrical panels are the primary units that control the flow of electricity to different parts of an office or building equipment. Each connection on the panel has a switch that can stop the flow of current to specific electrical circuits and appliances.

If an employee receives an electrical shock, shutting down the source of power may be the only safe method to stop the electrical current. OSHA requires enough access and working spaces around all electrical equipment, or panels, serving 600 volts or less. 29 CFR 1910.303(g). For equipment operating at 600 volts, nominal or less to ground, electrical panels must have a minimum of three feet of clearance in front of the panel and a minimum clearance width of 2.5 feet or the width of the equipment,



whichever is greater. This assures that in case of an electrical emergency, there is a clear working space in front of the panel for quick access to the circuit breakers. Electrical panels should also have secure covers to ensure no wires are exposed that could cause electrical shock. This also

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SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.

prevents the internal mechanisms from being exposed to dust, dirt, and moisture. Electrical panel boxes in commercial buildings should be secured and accessible by trained personnel only. It is important that these trained electrical staff be provided with appropriate PPE ie Personal Protective Equipment's for safe handling of these devices. We have shown few of the PPE's which need to be provided in all sizes so that every staff is well protected.

The floor of the electrical room housing the panel boards are not covered with Insulated rubber mat. It is important to have them in place to avoid accidental electrocution.

.The fire extinguishers should be placed at the entrance of the room housing dangerous devices. So that, they are handy when need to be used.



**PORTABLE FIRE EXTINGUISHERS**

**IN CASE OF FIRE:**

- Call the fire department immediately.
- Do not use an extinguisher without proper training.
- Know which extinguisher is correct for what type of fire.
- Only use portable extinguishers when the fire is contained to a small area.

**FIRE CLASSIFICATION:**

- A** Ordinary combustibles (wood, paper, cloth, plastic)
- B** Flammable liquids (gasoline, oil, grease, alcohol)
- C** Flammable gases (acetylene, propane, butane)
- D** Combustible metals (magnesium, sodium, potassium)

**P. A. S. S. OPERATING PROCEDURE**

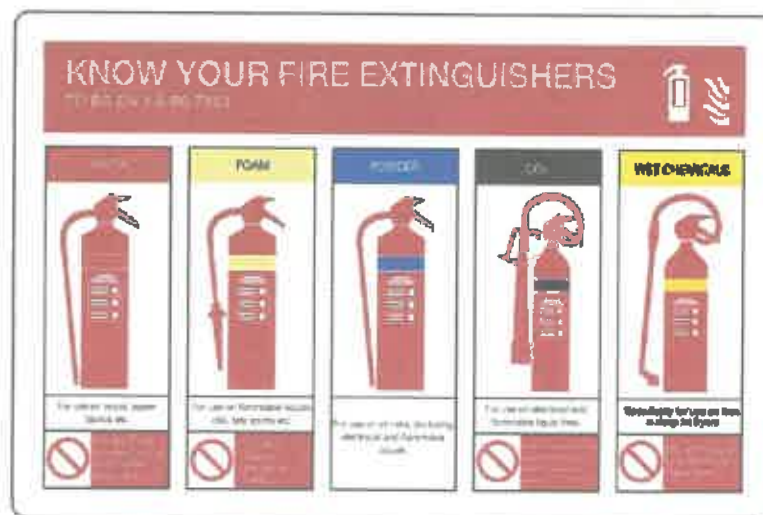
- P** **PULL** the pin. Hold the extinguisher with the nozzle pointing away from you, and release the locking mechanism.
- A** **AIM** the nozzle at the base of the fire.
- S** **SQUEEZE** the lever slowly and evenly.
- S** **SWEEP** from side-to-side at the base of the fire.

It is also important that the handling instructions are Predominantly displayed. The sample poster is reproduced for replication.

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Type	CLASS A Combustible materials (e.g. paper & wood)	CLASS B Flammable liquids (e.g. paint & petrol)	CLASS C Flammable gases (e.g. butane and methane)	CLASS D Flammable metals (e.g. lithium & potassium)	Electrical equipment (e.g. computers & generators)	CLASS F Deep fat fryers (e.g. chip pans)	Comments
Water	✓	✗	✗	✗	✗	✗	Do not use on liquid or electric fires
Foam	✓	✓	✗	✗	✗	✗	Not suited to domestic use
Dry Powder	✓	✓	✓	✓	✓	✗	Can be used safely up to 1000 volts
CO <sub>2</sub>	✗	✓	✗	✗	✓	✗	Safe on both high and low voltage
Wet Chemical	✓	✗	✗	✗	✗	✓	Use on extremely high temperatures



In case of fire, the appropriate Fire extinguishers should be placed at the entrance but outside the room.  
The details of such classified Extinguishers is indicated for reference.

Stones should be placed and not Tiles surrounding the transformer need to be removed.

### References

IEEE standard 1100-2005: Recommended practice for power and grounding sensitive electronic equipment.

IEEE standard 518-1982: Guide for installation of electrical equipment to minimize noise inputs to controllers from external sources.

Note: IEEE now has withdrawn this standard.

IEEE standard 142-1991: Recommended practices for grounding of industrial and commercial power systems.

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IEEE standard 81-1983 and 81.2-1991: Guide for measuring earth resistivity, ground impedance, and earth surface potentials of a ground system.

NFPA-78 Lightning Protection Code 1986, Quincy, Massachusetts: National Fire Protection Association, 1986.

Concealed batteries in operation or used batteries should be properly named and placed in proper order. The used batteries should be considered for REGENERATION for the second and subsequent cycles and prolong the disposal as the chemicals cause high level of damage to the environment.

We will discuss the regenerative system of used and weak batteries to enhance the life. It is important to know few points on handling of batteries.

BU-703: Health Concerns with Batteries.

Become familiar with the do's and don'ts when handling batteries. Batteries are safe, but caution is necessary when touching damaged cells and when handling lead acid systems that have access to lead and sulfuric acid. Several countries label lead acid as hazardous material, and rightly so. Lead can be a health hazard if not properly handled.



## Lead

Lead is a toxic metal that can enter the body by inhalation of lead dust or ingestion when touching the mouth with lead-contaminated hands. If leaked onto the ground, acid and lead particles contaminate the soil and become airborne when dry. Children and fetuses of pregnant women are most vulnerable to lead exposure because their bodies are developing. Excessive levels of lead can affect a child's growth, cause brain damage, harm kidneys, impair hearing and induce behavioral problems. In adults, lead can cause memory loss and lower the ability to concentrate, as well as harm the reproductive system. Lead is also known to cause high blood pressure, nerve disorders, and muscle and joint pain. Researchers speculate that Ludwig van Beethoven became ill and died because of lead poisoning. By 2017, members of the International Lead Association (ILA) want to keep the lead blood level of workers in mining, smelting, refining and recycling below 30 micrograms per deciliter (30µg/dl). In 2014, the average participating employee checked in at 15.6µg/dl, but 4.8 percent were above 30µg/dl. (Source Batteries & Energy Storage Technology, Summer 2015.)

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lead battery manufacturing and recycling plants. Soil levels in developing countries, including on the continent of Africa, recorded lead contamination levels of 40–140,000mg/kg.

### Sulfuric Acid

The sulfuric acid in a lead acid battery is highly corrosive and is more harmful than acids used in most other battery systems. Contact with eye can cause permanent blindness; swallowing damages internal organs that can lead to death. First aid treatment calls for flushing the skin for 10–15 minutes with large amounts of water to cool the affected tissue and to prevent secondary damage. Immediately remove contaminated clothing and thoroughly wash the underlying skin. Always wear protective equipment when handling sulfuric acid.

### Cadmium

Cadmium used in nickel-cadmium batteries is considered more harmful than lead if ingested. Workers at NiCd manufacturing plants in Japan have been experiencing health problems from prolonged exposure to the metal, and governments have banned disposal of nickel-cadmium batteries in landfills. The soft, whitish metal that occurs naturally in the soil can damage kidneys. Cadmium can be absorbed through the skin by touching a spilled battery. Since most NiCd batteries are sealed, there are no health risks in handling intact cells; caution is required when working with an open battery.

Nickel-metal-hydride is considered non-toxic and the only concern is the electrolyte. Although toxic to plants, nickel is not harmful to humans.

Lithium-ion is also benign — the battery contains little toxic material. Nevertheless, caution is required when working with a damaged battery. When handling a spilled battery, do not touch your mouth, nose or eyes. Wash your hands thoroughly.

Keep small batteries out of children's reach. Children younger than four are the most likely to swallow batteries, and the most common types that are ingested are button cells. Each year in the United States alone, more than 2,800 children are treated in emergency rooms for swallowing button batteries. According to a 2015 report, serious injuries and deaths from swallowing batteries have increased nine-fold in the last decade.

The battery often gets stuck in the esophagus (the tube that passes food). Water or saliva creates an electrical current that can trigger a chemical reaction producing hydroxide, a caustic ion that causes serious burns to the surrounding tissue. Doctors often misdiagnose the symptoms, which can reveal themselves as fever, vomiting, poor appetite and weariness. Batteries that make it through the esophagus often move through the digestive tract with little or no lasting damage. The advice to a parent is to choose safe toys and to keep small batteries away from young children.

### Safety Tips

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- Keep button batteries out of sight and reach of children. Remote controls, singing greeting cards, watches, hearing aids, thermometers, toys and electric keys may contain these batteries.
- Similar to pharmaceutical products, keep loose batteries locked away to prevent access by small children.
- Communicate the danger of swallowing button batteries with your children, as well as caregivers, friends, family members and babysitters.
- If you suspect your child has ingested a battery, go to the hospital immediately. Wait for a medical assessment before allowing the child to eat and drink.

## Ventilation

Charging batteries in living quarters should be safe, and this also applies to lead acid. Ventilate the area regularly as you would a kitchen when cooking. Lead acid produces some hydrogen gas but the amount is minimal when charged correctly. Hydrogen gas becomes explosive at a concentration of 4 percent. This would only be achieved if large lead acid batteries were charged in a sealed room.

Over-charging a lead acid battery can produce hydrogen sulfide. The gas is colorless, very poisonous, flammable and has the odor of rotten eggs. Hydrogen sulfide also occurs naturally during the breakdown of organic matter in swamps and sewers; it is present in volcanic gases, natural gas and some well waters. Being heavier than air, the gas accumulates at the bottom of poorly ventilated spaces. Although noticeable at first, the sense of smell deadens the sensation with time and potential victims may be unaware of its presence.

As a simple guideline, hydrogen sulfide becomes harmful to human life if the odor is noticeable. Turn off the charger, vent the facility and stay outside until the odor disappears. Other gases that can develop during charging and the operations of lead acid batteries are arsine (arsenic hydride,  $AsH_3$ ) and (antimony hydride,  $SbH_3$ ). Although the levels of these metal hydrides stay well below the occupational exposure limits, they are a reminder to provide adequate ventilation. Regeneration of week batteries for the second lease of life.

## REGENERATE YOUR SULPHATED BATTERIES

Battery regeneration is very popular. **80% of the batteries breaking down and losing capacity are sulphated, but can be restored with the right equipment.** Battery regenerator successfully replaces sulphation by active material thanks to an electrical high-frequency pulsation process. This process restores the battery capacity, giving you the ability to reuse old and sulphated batteries. You can also use the battery regenerator for annual maintenance to considerably prolong the lifespan of your batteries. The battery regenerator can be used in every lead-acid-based battery: starter batteries, stationary batteries, traction & semi-traction batteries, Ni-Cad batteries ... Since the college uses BATTERIES in large numbers, the management can consider to procure one unit at the centralised station in the college campus.

Fuel storage and handling.

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- ◆ Gas bottle storage regulations require adequate ventilation for gas bottle safety. In the event of an LPG gas bottle storage release of gas and without adequate ventilation, gas dissipation occurs slowly and the accumulated gas remains within its explosive range over a longer period of time.
- ◆ LPG gas cylinder storage rules require (LPG storage requirements) storage must be free from sources of ignition for gas bottle safety.
- ◆ LPG gas bottle storage must always be upright so that the LPG gas cylinder safety pressure relief valve is in the vapour section of the LPG (propane) gas cylinder storage.
- ◆ For LPG gas cylinder safety, you should treat any LPG gas cylinder storage that has ever been filled as a full cylinder, even if you believe it to be empty. Only gas bottle storage purged with inert gas can be once again considered empty.
- ◆ Never open the valve of any unconnected LPG (propane) gas cylinder storage, even if it is believed to be empty, as there is almost always some remnant gas in every gas bottle storage.

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- ◆ *LPG gas bottle storage (LPG cylinder storage) should be limited to no more than what is required.*
  - ◆ *Forklift cylinders not being used are required to be stored outside in well ventilated LPG storage. This is typically in a storage cage at least 6 metres (20 feet) from other structures.*
  - ◆ *LPG should never be stored in excess of 50C (122F) or near a heat source.*
  - ◆ *LPG gas bottle storage must be prevented from falling, movement or physical damage by storing them in approved cages/racks, securing the LPG gas cylinder storage with LPG gas cylinder safety chains or using other approved retention methods for LPG gas cylinder safety.*
  - ◆ *LPG - Liquefied Petroleum Gas - is heavier than air and will collect in low areas instead of dissipating.*
- As a result, there must be adequate ventilation and air movement in any LPG (propane) gas cylinder storage area.*
- ◆ *LPG gas bottle storage regulations (LPG storage requirements) require placarding when the combined capacity of the LPG gas cylinder storage exceeds 500 litres of water capacity.*

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## Disposal of used Batteries

In compliance with

**Category 7.1.1, 7.1.2, 7.1.3 and 7.1.5**



**Batteries stacked  
for disposal (typical).**

### **BATTERY PLACEMENT:**

The batteries disposal is an environment threat. The lead which is a major component has serious adverse effects. The acidic fumes damage the electronic components and when disposed to environment through uncertified local ragpickers either as scrap or buyback option, the institute stands to be morally responsible to such environmental pollution.

Hence the disposal of the batteries should be prolonged. This is possible by putting into use the Battery regenerative system

However, much before the regeneration It is good practice to make room for cross ventilation for the batteries to be placed in cool place. The benefits include –

- In normal operating mode, the batteries are known to last for 5 to 6 years.
- With good working practice, they would last for almost three times the life.
- Prolonged life of the Batteries.
- Avoids acid fumes accumulation on the Batteries.
- Increased life of all electronic gadgets around the Battery bank.
- Delayed discarding of the Batteries avoids environment pollution and Revenue outflow for the organisation.

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WE suggest to regenerate the batteries once every 3 years, so that the sulfur lining is minimized. If the regeneration is executed once every three years, we can regain the working performance to 95 to 98% of its original status.

However, this needs to be backed up with necessary periodical check with the density of the battery solution.

### **BATTERY MANAGEMENT:**

The batteries breath acid fumes. It is good practice to make room for cross ventilation for the batteries to be placed in cool place.

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All batteries should be placed in well ventilated area. As battery disposal is turning out to be a serious issue, ways to prolong the life of the batteries is very important from the environmental point and also from the Financial implications.

**We will discuss the regenerative system of used and week batteries to enhance the life. It is important to know few points on handling of batteries.**

### **BU-703: Health Concerns with Batteries**

**Become familiar with the do's and don'ts when handling batteries.**

Batteries are safe, but caution is necessary when touching damaged cells and when handling lead acid systems that have access to lead and sulfuric acid. Several countries label lead acid as hazardous material, and rightly so. Lead can be a health hazard if not properly handled.

### **Lead**

Lead is a toxic metal that can enter the body by inhalation of lead dust or ingestion when touching the mouth with lead-contaminated hands. If leaked onto the ground, acid and lead particles contaminate the soil

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and become airborne when dry. Children and foetuses of pregnant women are most vulnerable to lead exposure because their bodies are developing. Excessive levels of lead can affect a child's growth, cause brain damage, harm kidneys, impair hearing and induce behavioural problems. In adults, lead can cause memory loss and lower the ability to concentrate, as well as harm the reproductive system. Lead is also known to cause high blood pressure, nerve disorders, and muscle and joint pain. Researchers speculate that Ludwig van Beethoven became ill and died because of lead poisoning.

By 2017, members of the International Lead Association (ILA) want to keep the lead blood level of workers in mining, smelting, refining and recycling below 30 micrograms per decilitre (30µg/dl). In 2014, the average participating employee checked in at 15.6µg/dl, but 4.8 percent were above 30µg/dl. (Source Batteries & Energy Storage Technology, Summer 2015.)

In 2019, the University of Southern California published the detection of lead in teeth of children living near the Exide Technologies battery recycling plant in Vernon, California.

Lead occurs naturally in soil at 15–40mg/kg level. This level can increase multi-fold near lead battery manufacturing and recycling plants. Soil levels in developing countries, including on the continent of Africa, recorded lead contamination levels of 40–140,000mg/kg. (See [BU-705: How to Recycle Batteries.](#))

**Sulfuric Acid** The sulfuric acid in a lead acid battery is highly corrosive and is more harmful than acids used in most other battery systems. Contact with eye can cause permanent blindness; swallowing damages internal organs that can lead to death. First aid treatment calls for flushing the skin for 10–15 minutes with large amounts of water to cool the affected tissue and to prevent secondary damage. Immediately remove contaminated clothing and thoroughly wash the underlying skin. Always wear protective equipment when handling sulfuric acid.

## Cadmium

Cadmium used in nickel-cadmium batteries is considered more harmful than lead if ingested. Workers at NiCd manufacturing plants in Japan have been experiencing health problems from prolonged exposure to the metal, and governments have banned disposal of

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nickel-cadmium batteries in landfills. The soft, whitish metal that occurs naturally in the soil can damage kidneys. Cadmium can be absorbed through the skin by touching a spilled battery. Since most NiCd batteries are sealed, there are no health risks in handling intact cells; caution is required when working with an open battery. Nickel-metal-hydride is considered non-toxic and the only concern is the electrolyte. Although toxic to plants, nickel is not harmful to humans.

Lithium-ion is also benign — the battery contains little toxic material. Nevertheless, caution is required when working with a damaged battery. When handling a spilled battery, do not touch your mouth, nose or eyes. Wash your hands thoroughly.

Keep small batteries out of children's reach. Children younger than four are the most likely to swallow batteries, and the most common types that are ingested are button cells. Each year in the United States alone, more than 2,800 children are treated in emergency rooms for swallowing button batteries. According to a 2015 report, serious injuries and deaths from swallowing batteries have increased nine-fold in the last decade.

The battery often gets stuck in the oesophagus (the tube that passes food). Water or saliva creates an electrical current that can trigger a chemical reaction producing hydroxide, a caustic ion that causes serious burns to the surrounding tissue. Doctors often misdiagnose the symptoms, which can reveal themselves as fever, vomiting, poor appetite and weariness. Batteries that make it through the oesophagus often move through the digestive tract with little or no lasting damage. The advice to a parent is to choose safe toys and to keep small batteries away from young children.

### Safety Tips

- Keep button batteries out of sight and reach of children. Remote controls, singing greeting cards, watches, hearing aids, thermometers, toys and electric keys may contain these batteries.
- Similar to pharmaceutical products, keep loose batteries locked away to prevent access by small children.
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- If you suspect your child has ingested a battery, go to the hospital immediately. Wait for a medical assessment before allowing the child to eat and drink.

### Ventilation.

Charging batteries in living quarters should be safe, and this also applies to lead acid. Ventilate the area regularly as you would a kitchen when cooking. Lead acid produces some hydrogen gas but the amount is minimal when charged correctly. Hydrogen gas becomes explosive at a concentration of 4 percent. This would only be achieved if large lead acid batteries were charged in a sealed room. Over-charging a lead acid battery can produce hydrogen sulphide. The gas is colourless, very poisonous, flammable and has the odour of rotten eggs. Hydrogen sulphide also occurs naturally during the breakdown of organic matter in swamps and sewers; it is present in volcanic gases, natural gas and some well waters. Being heavier than air, the gas accumulates at the bottom of poorly ventilated spaces. Although noticeable at first, the sense of smell deadens the sensation with time and potential victims may be unaware of its presence.

As a simple guideline, hydrogen sulphide becomes harmful to human life if the odour is noticeable. Turn off the charger, vent the facility and stay outside until the odour disappears. Other gases that can develop during charging and the operations of lead acid batteries are arsine (arsenic hydride,  $AsH_3$ ) and (antimony hydride,  $SbH_3$ ). Although the levels of these metal hydrides stay well below the occupational exposure limits, they are a reminder to provide adequate ventilation.

### Regeneration of week batteries for the Second/Third lease of life.

Significance...

- The early regeneration results into second tenure of the batteries i.e. another term of 3 to 5 years as per Battery specifications.
- Optimised energy consumption. Thus, reduced cost of operation.
- Delayed disposal results into elimination of environment pollution.

Reduced impact on CARBON FOOTPRINT BATTERY MANAGEMENT :

All batteries should be placed in well ventilated area. As battery disposal is turning out to be a serious issue, ways to prolong the life of the batteries is very important from the environmental point and also from the Financial implications.

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Reduced impact on CARBON FOOTPRINT



**SOLUTION:** The placement of batteries needs to be at the place very close to cross ventilation, if possible, in open but shaded place. The following clippings are explained.

**WORK CULTURE:**

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Placement of footwear: Our work culture is depicted in the way we behave and exhibit.

Value for all commodities is important to conserve the mother earth. Hence the placement of material of use/substance/importance should find appropriate placing. The passage should be clear from all obstacles weather small or large. Here the placement of footwear is only an example. One needs to practice and exhibit in all sectors, be it waste or unused materials or the vehicles parked in wrong place.



*Electrical room should be provided with ventilation and free from all possible dumps.*



*This image is just for illustration and is not from the college*

## Electrical Power Usage:



### THOUGHT FOR EVERY MOMENT

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper would be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year.

**SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.**

It is important to understand the significance of the Energy use implication. The use of electrical power has been observed to be unnecessary. The administration should initiate to keep all unwanted and unused appliances switched off.

It is observed that the lights are left switched ON at majority of places and thus causing huge financial losses to the management and energy loss to the country.

**Solution:**

It is therefore required to install Light Intensity Sensors in all the rooms.

Lighting improvements should be carried out by using T5/LED or The Induction Light systems in lieu of normal tube lights. If the finance department permits, it is advised to install 40W Induction lamps in all classrooms.



**Light Intensity & Occupancy sensor**



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## **SAFETY:**



The large storage containers of Chemicals when placed open to easy access may lead to health hazards and also spillage.

The access to chemicals required for the days or two should be placed with easy access and the rest may be placed in separate room which is available at present.

The water taps are seen to be leaking all day. This will lead to exhaustion of the water required for normal activities and also for washing off the excess chemicals or skin contact.

The LPG pipeline is open and remains unpainted. It is important to avoid direct exposure to AIR and water to avoid pipe rusting and there by the possible leakage. It also helps to prolong the life of the PIPELINES.

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### **THOUGHT FOR EVERY MOMENT**

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**PAPERLESS OFFICE:** In the present working conditions, transmission of infection has become vital and to address the issue, we can consider to accept digital documentation process. It has also been now legalized in accepting all such documents and a step towards paperless office is the next office administration process. We have discussed few aspects in the article presented below. For more details, the link provided at the end may be browsed.

With due credit to the authors This article  
can be downloaded using the link

<https://www.ijeat.org/wp-content/uploads/papers/v8i4/D6268048419.pdf>

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# Paperless Administration in Indian Higher Education

Srimathi H. Krishnamoorthy A

*Abstract:* The Higher Education sector in India is witnessing massive and exponential growth in terms of number of students and institutions. The procedures associated with the academic processes such as admission, teaching, examinations and support services have also grown manifold. Institutions, irrespective of the size and scale, are practicing paperless administration using content ecosystem and digital tools. Both government and institutions make use of digital communication and associated applications. However, the over-dependence on paper in data processing is still a common practice which contradicts the maintenance of volumes of physical documents by the administrative and academic departments that many times leads to delays in responses. The ideal scenario of a paperless learning environment may not be feasible in reality but the extent of paper usage can be brought down drastically to minimum level with proper knowledge of information life cycle. The digitization with complete e-governance ensures paperless administrative process. The institutions are having impractical idea of process automation and reducing paper consumption. This paper analyzes the practices and methods to reduce minimum usage of paper – based system and explores the feasibility of interdependent work flow automation to make it better.

*Index Terms:* Admission, Paperless, Digital India Initiative, ECM, ERP

## I. INTRODUCTION

Though computers are extensively used in universities, the administration process is paper based. The digitization of admissions content is easy, but there is no clear to proceed further with respect to application integration, control over scattered electronic documents, smooth information flow between departments, consistency and de-duplication, where the Enterprise Content Management (ECM) system provides solution to this. According to Gartner, 2003, ECM refers all type of enterprise content and a bundle of software products which manage the entire content life cycle. (AIBM, 2010) further extends ECM definition as "the strategies, methods and tools used to capture, manage, store, preserve and deliver content and documents related to organizational processes, including unstructured information". ECM reduces burden of juggle between different Enterprise Resource Planning (ERP) applications, Customer Relationship Management (CRM), Learning Management System (LMS) and physical documents for decision support. The main challenge is in

creating well-defined document flow since the process deals both structured and unstructured data formats as the activities are interlinked in nature as given in Figure 1. The research is motivated by the growing attention of Government initiatives with Digital India movement and technological implementation in higher education institutions to serve students of digital era. The study examines and evaluates the existing paper processes and work flow which will result in the implementation of electronic solutions. The need of best practices in information exchange, system complying with recordkeeping laws and information security managements is also highlighted.



Figure 1: Educational Technology services deal with different content format

## II. GOVERNMENT INITIATIVES

Department of Electronics and Information Technology (DeitY), Government of India is taking significant steps towards Digital India program and the same is supported and extended by Ministry of Human Resource Development (MHRD), Accreditation bodies and higher education councils. The announcements, notices, circulars and other communications from apex bodies in respective institutions are shared via email and hosted in website for quick reference. All India Council for Technical Education (AICTE) invites institutions to upload the approval documents of technical and management programmes. University Grants Commission (UGC) accepts online submission for course approvals and institute affiliations in Distance Education, where it continues the hard copy submission for other programmes and affiliations. The online submission and electronic form (e-forms) upload can be



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**Paperless Administration in Indian Higher Education**

extended and practiced by UGC and all other statutory professional councils. The E-Form is used in self-study report of accreditation bodies such as National Assessment and Accreditation Council (NAAC) and National Board of Accreditation (NBA). The supporting documents are also to be submitted in the form of scanned digital documents.

The digital submission and facility of system decision support system on various parameters helps the accreditation bodies to scale up their reach and serve as pre-qualifier to plan evaluation. (MHRD, 2017) MHRD has adopted digital technology for information transmission under National Mission on Education through Information Communication Technology (NMEICT):

- Know your college portal for students.
- National Program on Technology Enabled Learning (NPTEL): Indian Institute of Technology has promoted Massive Open Online Courses (MOOC) with edX platform as digital initiative of MIT and Harvard University to offer quality education from the best teachers to Indian students and ensure the improvement of individual academic performance.
- Educational satellite (EDUSAT) to home platforms.
- A-View as multimedia platform for video delivery.
- Virtual Labs helps in establishing remote access of lab experiments in various disciplines of science and engineering.
- E-Yantra (next generation embedded system). Talk to teachers. Spoken tutorial and free open source software to be used for academic purpose.
- Data collection in data capture format (DCF) is annual All India survey on Higher Education (AISH) and National Institute Ranking Framework (NIRF). The structural DCF used in data collection bases the computation of *Times* Enrollment ratio (T-ER) of higher education and used to other statistical analysis.
- Library Resources: As a part of Universal Digital Library Initiative, the digital library India has scanned books written in English and Indian language (Haldar et al., 2016). The project involves several research activities such as language technologies in text summarization, machine translation, hand writing recognition, optical character recognition etc.,
- Digitalizer facility: There are several school boards made their board result certificates digital and this enable the institutions to verify the scores. This will ease the next 1st preparation of educational institutions in admission process, when the service is utilized by all boards of school education. As admission application went online, the digital verification of certificates initiates the submission of hard copy submission of grade sheets and time taken for manual certificate verification is halved in case of Jamia Millia Islamia Engineering (Counseling 2018).

(UGC, 2017) UGC has also taken significant digital initiatives at its end and also through Information Library Network (INFLIBNET) as listed in Table 1.

**III. AT INSTITUTION LEVEL**

Apart from Government directives, institutions realized that the millennial students are technology oriented and demanding quick response on rendered services. The computerized business systems improve administrative efficiency and reduce a toll on management and faculty to process paper documents on students, courses and exams.

Table 1. List of digital initiatives of UGC and INFLIBNET.

• Office automation	• Mobile device management system
• E-Governance	• The web activity monitoring portal
• Dear faculty letter	• EFL connectivity to all central libraries
• Digital office update	• Integrated portal for planning library activities
• Academic portal	• National academic database: NAD-India website
• UGC-NET sites	• Online courses (MOOC) with open source platform
• E-Form for self report	• E-20 activities for all projects programs
• Student portal systems	• Self-helping digital repository of literature
• e-Content development portal	• e-Infrastructure access to content creators
• Managing mobile app	• Set up cyber security strategy of bibliographic data
• Open access database of research	• Set up State of the art digital Asset Management
• UGC LIBRARY 2.0 theme	• I2U: The Indian Management System

Universities incorporated electronic communication process for any kind of communication, upload the same on website and send individual admission approval letter through email. (VTU, 2018) One of the universities hopes to gradually move towards a less paper and paperless office, since it serves digital communication to more than 300 affiliated colleges under its control.

(ePrasada, 2015) Considering the Indian youth population who migrates to tertiary education, the 'go online' in admission process reduces the paper usage. In addition, it helps to minimize problems related to overlapping counseling dates and in turn reduce physical and financial burden of candidates due to multiplicity and transportation. The counseling process of engineering, medical and other professional courses are carried out online. Most of the entrance examination, application submission and counseling are made online. As the medical entrance is mandatory for admission throughout India, the strength of students who appear for medical entrance is increased and council planned to conduct medical entrance through online from year 2019.

(SRM, 2016) One of the biggest private institutions made its student course registration and support services as online too as fully flexible credit system, where the students have the liberty to choose course of study and select faculty members. Students receive units/credits/grade table upon completion of registration. The students are serviced with quick response on demand and eliminated to shuttle from one office to another for processing paper documents.

(Mindlogix, 2016) There are quite a few universities adopted paperless exam and digital evaluation system. The first initiative was sending question paper online through a digital secure network and affiliated colleges download the same, take sufficient protest and distribute. In the next level, the answer scripts are scanned and sent to examiners for evaluation. In the paperless exam, the students will get question paper on their computer screens, which avoid question paper leak and



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printing & dispatch of answer scripts. The technological advancement in digital exams permit candidates to write exams on flexible Tab devices, automatic dummy number allocation, quick process of multiple and re-evaluation processes, simplify the review of evaluated answer scripts and result processing with dashboard analytics.

(Karadik, 2015) The university libraries are extended to do innovative e-resources services using technology such as OPAC search facility for both print and e-books of different publishers with links to full texts, digital scanning facility, host vide lectures and archive, online question bank, coordinate with MNC initiatives, online reservation and renewal of books, indexing & abstracting services usage of Web 2.0 tools to disseminate new arrivals, maintain e-dissertations and subscribe e-journals. The digital libraries also face few challenges like archival of resource, longevity of storage media, removal of obsolete information to speed up the search process, deal copyright issues and intellectual property of resources and Universal access to knowledge and maintenance.

(NDTV, 2017) In accomplishing the government's challenging task of shifting India from cash dependent to a less cash-reliant economy, LIC issued an advisory to adopt online payment methods for tuition fees, exam fees, vendor payments, salary, wages and other campus services. All shops and vendors in institution premises including photocopyer services, canteen and cooperatives shops have adopted different mode of cashless transactions. In addition, all these shops were equipped with point of sale machines. One of the institutions has introduced smart cards to the students to buy food items canteen and shops in campus premises. The money is deposited by the parents online.

(Chronicle, 2018) Despite the digital initiatives of apex body in central and state governments and higher educational institutions own mission on implementing automation, there are institutions who could not achieve desired result in paperless office. The simple conversion of paper based activities to e-form will not be sufficient. The strong domain expertise with business process workflow, interconnectivity of data must be required. This necessitated knowledge on both ECM guidelines and Higher education administration.

#### IV. CHALLENGES IN MOVING PAPERLESS

(LaMonte, 2016) indicates that the paper process still dominate in the office administration and increased the challenge in digital transformation. The mere implementation of ECM tools may not be sufficient, the performance to be measured for removing paper from operational processes in terms of response time, collaboration, back-office cost and compliance regulation to be treated as ECM is a process defined & initiated by stakeholders. (Larssen et al., 2016) survey reveals organization perception (P1 to P9), operation (O1 to O5) and need (N1 to N5) on ECM implementation as shown in the figure 2.

The initial budget on technology investment may be high in paperless, but the paper based operations are costly in terms of back-office operation with duplication and skewed information. The main difficulties of ECM implementation

are listed in the order as follows: re-orienting staff, integration with existing system, define process with clarity and making a business case, contracting legal compliance and dealing exceptions (Genesis et al., 2018) The paperless higher education mission is affected by organizational cultural change, re-orienting staff, integration with existing system, verbatim implementation of traditional workflow, lack of network connectivity & power supply in rural area and overdependence on consultants. (Isaacs et al., 2016) The goal of developing ECM is to overcome the listed challenges and to make the system more transparent with efficient service integration.



Figure 2. Organization view on ECM implementation  
(Source: Larssen et al., 2016)

#### V. ECM GUIDELINES

(SIAMS, 2017) As it is easy to create and reproduce digital documents over paper documents, a number of questions need to be answered prior to implementation.

- (Soni'a, 2016) sharing an document as approved to share as data
- (AIMM, 2010) Assess the functional gap in content management, integration of business application & link to database and document system with its affordability
- (Mullins et al., 2013) Version control to avoid duplication and inconsistency especially in concurrent access
- (Kumar, 2012, (GAV-PM), 2013) Fully automated retention rules of these records & documents. Compliance with institutional governance & Record and Document retention policies
- (eSAP, 2010) security impact & third party access requirements
- (Nordham et al., 2014) Balancing user expectations and policies of information governance in cloud migration
- (Loprazant, 2014) Technical viability of current future content tools with ECM architecture
- (DIT A, 2014) The ECM reference architecture framework given in figure 3 answers all the listed questions and provides solutions beyond the expectations. Apart from content capture & delivery of both human created and application created information, ECM is designed to manage document, web content forms, records, digital assets of



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rich media content, multi-format content repositories, business flow, preservation policies and development tools of workflow, taxonomy, forms template and content authoring. The core content services include indexing, searching, digital rights, security, collaboration, approvals, digital signature and etc. (Alwan et al., 2014). Thus the properly implemented ECM positively influences on speed of problem identification and decision quality. In addition, it ensures centralized control with local flexibility that helps higher educational institutions to provide better services.



Figure 3. ECM Reference Architecture Framework (Source : DTIA, 2014)

VI. AREAS TO IMPROVE

(AACSB, 2010) Education sector is one of the important industries which not only creates and maintains large amount of information but also in the need to secure storage access and efficient business process. The functions of higher education system are segmented based on the nature of information impact, stakeholder's presence and kind of ECM implementation. The high impact business information which involves strategic decision on approvals and permanent preservation are grouped and listed in Table 2. The lack on preserving high impact strategic documents creates severe administration issues. The process flow of admission with both paperless and paper-based options is listed in Table 3, where the technology usage in every stage impacts response in admission process.

The online admission process will enable the distributed target audience across the country and attract international students. The required ECM guidelines on academic, accounts and support services are listed in Figure 4. Effective university websites speak clearly, even to yet-to-be students, and make it understandable by all. Table 4 provides guidelines on web content creation maintenance.

Table 2. ECM guidelines for high impact Enterprise Content

Objectives	Key Features
<ul style="list-style-type: none"> <li>1. Enhance the efficiency of business processes</li> <li>2. Reduce the cost of business operations</li> <li>3. Improve the quality of business operations</li> <li>4. Increase the security of business operations</li> <li>5. Enhance the collaboration of business operations</li> <li>6. Improve the decision making of business operations</li> <li>7. Increase the productivity of business operations</li> <li>8. Enhance the customer service of business operations</li> <li>9. Improve the employee satisfaction of business operations</li> <li>10. Increase the overall business performance</li> </ul>	<ul style="list-style-type: none"> <li>1. Content management system (CMS)</li> <li>2. Document management system (DMS)</li> <li>3. Business process management system (BPMS)</li> <li>4. Workflow management system (WFM)</li> <li>5. Content collaboration system (CCS)</li> <li>6. Content security system (CDS)</li> <li>7. Content analytics system (CAS)</li> <li>8. Content integration system (CIS)</li> <li>9. Content optimization system (COS)</li> <li>10. Content distribution system (CDS)</li> </ul>

Table 3. Admission

Admission Stage	Key Features	Key Objectives
<ul style="list-style-type: none"> <li>1. Application</li> <li>2. Admission</li> <li>3. Enrollment</li> <li>4. Orientation</li> <li>5. Graduation</li> </ul>	<ul style="list-style-type: none"> <li>1. Online application</li> <li>2. Online admission</li> <li>3. Online enrollment</li> <li>4. Online orientation</li> <li>5. Online graduation</li> </ul>	<ul style="list-style-type: none"> <li>1. Increase the efficiency of business processes</li> <li>2. Reduce the cost of business operations</li> <li>3. Improve the quality of business operations</li> <li>4. Increase the security of business operations</li> <li>5. Enhance the collaboration of business operations</li> <li>6. Improve the decision making of business operations</li> <li>7. Increase the productivity of business operations</li> <li>8. Enhance the customer service of business operations</li> <li>9. Improve the employee satisfaction of business operations</li> <li>10. Increase the overall business performance</li> </ul>

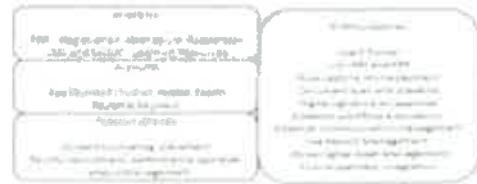


Figure 4. ECM guidelines in Academic, Accounts and support services

Table 3. ECM Web guidelines & Best practices on Web Content

- 1. Develop a clear and concise mission statement for the website and ensure it is visible to all visitors.
- 2. Use a clear and consistent navigation structure to help visitors find what they are looking for.
- 3. Keep the website up-to-date and relevant. Remove outdated information and add new content regularly.
- 4. Use a clear and consistent design and layout. Avoid clutter and use a clean, professional look.
- 5. Use a clear and consistent tone and voice. Avoid jargon and use simple, easy-to-understand language.
- 6. Use a clear and consistent branding and logo. Avoid using too many colors and fonts.
- 7. Use a clear and consistent contact information. Make it easy for visitors to get in touch with you.
- 8. Use a clear and consistent privacy policy. Make it easy for visitors to understand how their information is being used.
- 9. Use a clear and consistent terms and conditions. Make it easy for visitors to understand the rules of the website.
- 10. Use a clear and consistent disclaimer. Make it easy for visitors to understand the limitations of the website.



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**VII. CONCLUSION**

(AISHE, 2018) In India, there are 905 universities, 9050 college and 18011 stand alone institutions as on date with cumulative enrollment of 38.6 million. Implementing paperless in most office communication itself makes great change in cost cutting on paper usage and move towards green institute. The research covered the government initiatives on digitization and the prospects of paperless in higher education audience, administration, research and support services. The present disintegrated, stand alone applications, paper based services to be integrated using ECM reference architecture with reference to capture, storage, security, access & delivery compliance. The institutions need to understand the importance of managing content life cycle from creation to final disposition. The study recommends the institutions to investigate their present operation, future need, scale up with short, mid, long term plan of action in ECM implementation in turn make the administration go paperless. This helps in enhancing the communication, student experience, student support services and creating a campus with technology excellence.

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**AUTHORS PROFILE**



Prof. H. Inara has five decades of experience in higher education and services. She is employed at IIT of Mumbai in Mumbai and Technology since 1990 and worked in various domains such as academic and administrative. She is passionate about the studies on higher education systems, operational framework and academic mobility.



Prof. A. Kishanramani has three decades of experience in engineering education. He is currently employed at NASTRA, Dharwad University. He is passionate about the studies on operational techniques, machine, through renewable energy sources and higher education system.



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City has seen very high traffic growth and the vehicle parking is a burning issue.

Children exhibit what they learn at home and educational institutions.

Today's crisis of vehicular movement is mainly due to erratic parking of vehicles at every space one finds it.



It may also be known that; the majority of the lives are lost due to road accidents caused by rough driving.



It is seen from the college campus that the need for disciplined parking and vehicle movement is necessary step to be initiated.

To build-up sense of responsible citizenship, The management should educate the children and the staff in following traffic rules and parking in its designated location.



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The illustrations below set the way forward.

### Culture

It is important to consider the factors that can disturb others behaviour.

Few factors the college can consider to bring in change in are

#### PARKING:

Random parking, be it two-wheeler or the four/six wheelers. We often see randomly parked. It is important that all the vehicles are parked in specified areas in such a way that one need not struggle to move out of the place.

Educational institutes should inculcate these basic best practices so that the three to five years of their college days, the student learn the sense of social responsibility. There behavioural culture makes a positive change when they walk out and behave responsibly. It is a matter of pride for the college too, to speak and practice best practices.

#### SUGGESTION:

We suggest that the parking space be marked with borders so that the staff and students

The images shown below are for illustration only and are not captured in the campus. (Kindly see the gallery for campus related photos)



#### THOUGHT FOR EVERY MOMENT

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**SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.**

park the vehicles at the designated space.

The image shown on the right, gives an indication for good parking.



The beautiful structures planned by the administrators and built by the management clearly indicate that they are concerned about the environment and are committed to deliver good sense of civic discipline and knowingly or unknowingly are exhaling the process of heading towards **ZERO CARBON FOOTPRINT**.

With the infrastructure is in place, the staff are inclined to perform, there is nothing that can stop from achieving the required.

The designated staff be trained in understanding the needs and allowed to test their innovative skills to move towards green practices will accelerate the process of green revolution.

### **EXHIBIT GREEN HABITS:**

**The college administration**, should engage its resources in exhibiting Green Habits as discussed.

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**EXHIBIT GREEN HABITS:**

The college administration, should engage its resources in exhibiting Green Habits as discussed.

**ACTION PLAN SUMMARY:**

Earmark the action plan.

- Invite subject experts for Tec talks,
- Organize in person panel discussions and interaction to propagate the knowledge and mitigate the problems in practicing the same.
- Prioritize the initiatives and execute.
- Observe the benefits and shortcomings.
- Workout further improvement by involving the staff and students.

**MODE OF ACTION:**

- The process of GREEN AUDIT & ENERGY CONSERVATION should be carried out in three steps.
- Good housekeeping practices using available manpower.
- Minor alterations using in house work culture with minimum investments on accessories as discussed.
- Capital investments, which may be required for installation of new methodologies may be taken up on phased manner.

We will be happy to assist you for any further advice/consultancy if required either on Rainwater management or on any of the measures discussed in the report.

We hope the measures are implemented in good spirit and to human convenience and comfort.

For SUNSHUBH TECHNOVATIONS PVT LTD.,

Mallikarjun A. Kambalyal. B.E. (E&C)  
Certified Energy Auditors EA-3485



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# ENVIRONMENT AUDIT REPORT 2019-20

in compliance with the statutory requirements under the  
NAAC accreditation procedures



Audited by:

Principal Lead Auditor:

Mallikarjun A Kambalyal, CEA, ISO 50001, 14001 Lead Auditor.

**SUNSHUBH TECHNOVATIONS PVT LTD.,**

120-2, LGF, 'A' wing, IT Park,  
Hubli - 580029, Karnataka, India.

German off: Neuer Weg 166, 47803 Krefeld,  
Dusseldorf, Germany Anbieter-Nr 1041388



Website: [www.sunshubhrenewables.com](http://www.sunshubhrenewables.com)  
Email: [mallu\\_solar@yahoo.co.uk](mailto:mallu_solar@yahoo.co.uk), [ceo@sunshubhrenewables.com](mailto:ceo@sunshubhrenewables.com)

### **CARBON FOOTPRINT - GREEN PLEDGE (proposed)**

We the Principal, the staff and students, adopt responsible practices in our daily activities with due regard to the environment. We set and continually review objectives and targets for achieving our goal to protect our entire college premises in front, backyard and all other non-approachable areas of all primary and secondary pollutions.

We seek to comply with safety and environmental regulations to implement inhouse standards to improve our environmental performance. We commit ourselves to the safe operation of all our working habits, be it in classrooms, library, canteen, on road, off road, in-campus out-campus as well as at our place of stay. We adhere to reduce environmental load by efficiently using resources, saving energy, reducing waste, encouraging material recycle, with special emphasize to minimising emissions of greenhouse gases, ozone depleting substance and particle matter.

We endure to minimise environmental loads and adopt environmentally friendly technologies when ordering and purchasing necessary products and resources. We endure to attend educational programs and promulgate our close friends and colleagues to follow suite We endure to ensure that we recognize the essence of this Green policy by actively and aggressively conducting workshops and training to all in environmental concepts. We make wide ranging social contribution to close association with the students, teaching staff, administrative staff, housekeeping staff by disclosing environmental information and supporting environmental consumption.

-Sd-

Principal

*(Indicative templet for display at all prominent areas, waiting rooms, canteen, library, relaxing areas in the campus.)*

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#### **'THOUGHT FOR EVERY MOMENT'**

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**EXECUTIVE SUMMARY.**

\* For details, please follow the discussions in the report.

Observations*	Issues/Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*
Good Practices.	It is important to replicate all good practices discussed to all areas in the campus.	Focused activities	N/A	N/A	Focused results.
Organic waste management.	System needs to be brought into order.	Handling costs	Composting at point of source	Nil/	Third party handling costs
Water management.	Flooding the lawns	Excess water consumed	Sprinkler.	@ Rs 1000/- per unit	Energy & Water savings
Rainwater Harvesting Abuse and Use.	Water contamination	Loss of quality water source.	Proper filtration should be incorporated.	@ Rs 8000/-	Third party supply.

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Observations*	Issues/Problems*	Resulting losses*	Remedial measures	Capital*	Projected savings*
Chemical waste disposal	Attracts pollution boards and authorities and capital costs	Loss of revenue	Good use practices.	Nil	Longer/extended life of Batteries
LPG (Fuel ) cylinders storage and	Fire hazards	Loss of life and loss of assets	Organised way of handling explosives	Nil or minimum	Safety in place.
HACCP practices.	Inconvenient and non-operation of assets and utilities provided.	Added manpower costs.	Provide Sanitary pad dispensers at easy & where required.	Rs. 15000/- per unit.	Health safety compliance.
Utility Management.	Maintenance	Inefficient operation.	Periodical cleaning	Nil	Increased efficiency.

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Observations*	Issues/Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*
Food wastage and waste minimisation.	Random disposal	unaccountability	Segregate, weigh and deliver.	NIL	Minimised wastage.
Construction waste management.	Unaccountability	Call for penalty or pollution	Land use change	Labelling & Transportation	Organised and compliance.
Asset management	Unaccountability	Loss of records	Move the unused assets to proper store	NIL	Increased accountability
Indoor Air Quality	Inhaling of polluted air	Human inefficiency	Fresh air filters	Rs.10k-100k	Complains OSHO safety standards
Fire Safety	No training, awareness and non-suitable place.	Loss of assets	Training and awareness	NIL/Minimum	Emergency preparedness.

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**Criteria 7.1.6**

**ENVIRONMENT AUDIT COMPLETION CERTIFICATE**

I, Mallikarjun A Kambalyal, endorse and confirm that the ENVIRONMENT Audit has been carried out on 7<sup>th</sup> Jan 2020 under the instructions of Dr.B. M. Patil, Principal, KLE's SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR.

This report is generated based on the site visits and evidence collected from the site.

All attempts have been made to evaluate the scope for development and inculcate green practices in the campus and extended throughout the campus. The focus is also laid to make positive impact on the society for a better living.

I also confirm and sign this certificate, In case the institution needs demonstration, my team of professionals shall be happy to do so.

We present this report to much more than the legal or mandatory compliances. This report is tabled in two parts. The first forms the core discussions which are general in nature. The second section is subject specific under the statutory requirements of the NAAC accreditation norms. They are Audit reports on, Green aspects, Energy aspects, Environment aspects, Health aspects and the discussions on net CARBON FOOTPRINT & the CARBON HANDPRINT initiatives.

Any modifications, changes, omissions after the site visit shall be exclusive.



**Authorised Auditor.**

**Mallikarjun A. Kambalyal B.E (E&C)**

**Certified Energy Auditors EA-3485 & ISO 50001:2011 & ISO14001:2015 Lead Auditor.**



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**BUREAU OF ENERGY EFFICIENCY**



Examination Registration No. : **EA-3485** Serial Number **2839**

Certificate Registration No. : **2839**

**Certificate For Certified Energy Manager**

This is to certify that Mr./Mrs./Ms. **Mallikarjun A Kambelraj** .....  
Son/Daughter of Mr./Mrs. **Aadhasappa V Kambelraj** ..... who has passed the National  
Examination for certification of energy manager held in the month of **April 2008** ..... is  
qualified as certified energy manager subject to the provisions of Bureau of Energy Efficiency  
(Certification Procedures for Energy Managers) Regulations, 2010.

This certificate shall be valid for five years with effect from the date of award of this certificate  
and shall be renewable subject to attending the prescribed refresher training course once in every  
five years.

His /Her name has been entered in the Register of certified energy manager  
at Serial Number **2839** ..... being maintained by the Bureau of Energy Efficiency under the  
aforesaid regulations.

Mr./Mrs./Ms. **Mallikarjun A Kambelraj** ..... is deemed to have qualified  
for appointment or designation as energy manager under clause (i) of Section 14 of the Energy  
Conservation Act, 2001 (Act No.52 of 2001).

Given under the seal of the Bureau of Energy Efficiency, this **7<sup>th</sup>** .....day  
of **February, 2013** .....

  
Secretary  
Bureau of Energy Efficiency  
New Delhi

Dates of attending the refresher course	Secretary's Signature	Dates of attending the refresher course	Secretary's Signature
26.03.2020			

**Bureau of energy Efficiency Regd No: EA3485**

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## ***Certificate of Successful Completion***

**Intertek**

***This is to Certify that***

***MALLIKARJUN A KAMBALYAL***

***has successfully completed the***

***Intertek***

***CQI & IRCA Certified ISO 14001:2015  
Auditor Conversion Training Course***

*The Course includes the assessment and evaluation of Environmental Management Systems to conform to the requirements of ISO 14001:2015 and ISO 19011:2011*

*This course is certified by the Chartered Quality Institute (CQI) and the International Register of Certificated Auditors (IRCA)  
- IRCA REFERENCE 18093 -*

*The course meets the training requirements for individuals seeking certification under the IRCA Auditor Certification Schemes*



*Authorising Signature: Vyoma Shivam*

*Course Dates: 14<sup>th</sup> - 16<sup>th</sup> July 2017*

*Membership Application To Be Made Within 3 Years From Last Day of Course*

*Certificate Number: 47730*



**ISO Certified Lead Auditor. Certificate No: 47730**

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## BSI Training Academy

This is to certify that

**Mallikarjun A. Kambalyal**

has attended and passed

**Energy Management Systems (ENMS) Auditor/Lead Auditor Training Course  
(ISO 50001:2011)**

Pranavand Ramakrishnan, Director of Training

Date: 15/04/2018 - 18/04/2018

Certificate Number: ENR-00253448

This certificate is valid for 3 years from the date above for the purpose of registering as an auditor with IRCA.



Course number A17583 certified by IRCA

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...making excellence a habit.

**ISO Certified Lead Auditor. Certificate No: ENR-00253448**

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**Why is this audit being carried out.**

**Why it's Important to have an Energy Audit**

Whether you own or manage a small business, a large commercial facility, or a manufacturing operation, it's important to take advantage of any tips, programs and incentives that will help you save money on your energy bills. There are measures that will generate savings to positively impact your bottom line immediately, as well as longer-term strategic initiatives to assess your needs and stabilize your energy spend in the longer term – which is great news for your budget!

One such initiative is an energy audit. Energy audits reveal your usage patterns, identify waste, over-expenditure and, generally, make you fully cognizant of where your energy dollars are going. This knowledge will enable you to be more efficient with your energy use and be able to track and accelerate savings. Energy Audits may sound expensive or complicated, but they can be free and are easier than you think.

**What is an Energy Audit?**

An energy audit is an analysis of a facility, indicating how and where that facility can reduce energy consumption and save energy costs. Its insight to energy efficiency and conservation can lead to significant savings on the company's utility bill.

**Why Should You Get an Energy Audit?**

Energy costs are soaring and your business can be at considerable risk if you do not take the guesswork out of your energy usage and the budget you need to cover it. Energy audits identify where your business is wasting energy. Residential and commercial properties account for around 10% of carbon emissions in the US, according to the EPA, which means they are very inefficient and waste huge amounts of energy and... revenue. An energy audit helps by revealing just how and where energy is being wasted. With thousands of commercial energy customers nationwide, we are well-qualified to advise you on which methods are best used for reducing energy waste and

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overall energy consumption. Let's start with a simple free evaluation of your bills and show you how we have been found to save between 5% and 35% for many of our customers.

In the case of energy, less is more. Lower energy consumption equals lower energy costs. And, of course, less energy consumption is obviously good for the environment.

As you can see, to be truly effective, energy management requires a strategy just like the other aspect of your operation and measures to curb costs can be simple and in some cases free. Gaining more control over your energy costs will improve the general health of your budget. Not only that but reducing your CARBON FOOTPRINT is great for the environment too!

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## ENVIRONMENT audit objectives.

ENVIRONMENT Audit was initiated in the beginning of 1970's, with the motive of inspecting the work executed within an organization, whose exercises could cause risk to the health of inhabitants and the environment. It exposes the genuineness of the proclamation made by the organisation with the concern on health issues. As a consequence of their operations with respect to environmental pollution it is the duty of the organisation to carry out the green audit of the ongoing processes for various reasons, such as,

- To make sure whether one is performing in accordance with the relevant rules and regulations,
- To improve the procedures and aptness of material in use,
- To analyse the potential duties and to determine a way which can lower the cost and to the revenue.

Through green audit one gets adoration as to how to improve the condition of the environment. There are various factors that were forced upon and determine the growth of/or conduct of green audit. Incidents like,

- Decades old Bhopal gas tragedy, that has left its residual effect which still haunts us.
- Our buildings catching fire due to various reasons,
- Industries blowing off taking valuable human lives etc
- People going sick, feeling tired, after long hours of operations in the organization,
- Increased demand of generators due to inconsistent power supply, which has resulted or lead into recent floods and droughts, are some of the situations to ponder about!

To address various issues in context with human health, green audit is assigned to "Criteria 7" of NAAC (National assessment and

Know  
about this  
Audit and  
the  
objectives

- Why?
- Where?
- What?
- When?
- How?

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accreditation council) accreditation. NAAC is a self-governing organization in India that declares the institutions as Grade "A++", "A+", "A", Grade "B", .... according to the scores assigned at the time of accreditation.

The other intention of organising green audit is to update the environment conditions in and around the institutions i.e., within the compound and outside the compound. It is carried out with the aid of performing certain tasks like waste management, energy consumed, diesel burnt if performing the objective of the organization. Lastly to self-assess the net carbon footprint of the conduct of process in the organization.

#### The goals of green audit

- The purpose of carrying out green audit is securing the environment and cut down the threat posed to human health.
- To Make sure that rules and regulations are complied with.
- To avoid the environmental interruptions that are more difficult to handle and their corrections call for high cost.
- To suggest the best protocol for adding to sustainable development.
- To execute the process of the organisation utilising minimum natural resources and efficient use of those resources contributing to minimum waste generation.

#### How is the green audit conducted?

##### Pre-audit

- Planning
- selecting the team of auditors both internal and external
- schedule the audit facility
- acquire the background information

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- visit areas under audit

#### On site conditions:

- Understand the scope of audit
- Analyse the strengths and weaknesses of the internal controls
- Conduct audit with end user comfort focused and making it easy to perform.
- Collect necessary evidence so that the stakeholders stand to understand how and where they are going wrong in the process of their conduct.
- Post audit draw the report based on the data collected.
- On confirmation of the preliminary report, draw a final report of the observations and inference with accuracy more near to implementable way.
- Discuss various remedial measures for alternatives if required.
- Prepare an action plan to overcome the shortcomings with continual observation on the action plan initiated.

#### Steps under green audit

**Water audit:** Water is one of the cheapest commodities next to the Air we breathe. Although we Indians, use less water in comparison to western countries. However, the extent of pollutants that we leave behind has polluted all the resources including the deep well.

Rainwater harvesting is one of the best techniques that can be adopted by harvesting the rainwater and using it at the time of scarcity. the audit team to observe and investigate the relevant methods that can be adopted and implemented and draw the balance of use of water.

**Waste management audit:** The point of generation of waste, the type of waste generated, i.e., hazardous, recyclable and organically compostable wastes and segregating method at the

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point of generation for easy and best way to handle the same. Evaluating such methods to minimise the use of resources in the process of their management.

**Energy audit:** It deals with use of energy in the conduct of the process. The priority is topmost for conservation over efficiency; hence, energy auditor should always consider not to use the energy if necessary. At best it can be used judiciously.

**Environmental quality audit:** It analyses air quality, noise level and the programs undertaken by the institution for plantation creating awareness of trees around us and how nature provides us with remedial measures within its framework.

**Health audit:** In the process of use of resources and conduct of the activities, they can develop impact on human health, that might be off minutely harmful, cause permanent disorder or may even cause death. Occupational health hazards are discussed in detail and the stakeholders are informed of the same and required necessary remedial measures indicated.

**Renewable energy:** To make in organisation net zero net zero carbon emission use of renewable resources including energy such as solar wind biogas geothermal energies are put into ooh utilisation.

**Carbon handprint:** The net impact All the above audits should be to make an organisation contribute zero emissions which are called bye bhai use of water generation of waste use of energy e environmental damage health damage and finally to explore if the campus or direction can go in in contributing to third-party emissions minimising

**Benefits of green audit:** To draw home the benefits, the system has been separated out into various audits as listed above. In doing so, and if audit findings are effectively implemented there are many advantages that can be practised in the process

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- Recognise the cost saving methods through waste minimising and managing technologies.
- Point out the prevailing and forth coming complications.
- Authenticate conformity with the legal requirements.
- Empower the organisation to frame a better environmental performance.
- Portray a good image of the Institution which helps build better relationships with the group's organisations, stakeholders in and around its operations

Enhance the alertness for environmental guidelines duties and conduct of preparedness for any eventualities due to environmental disasters.

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### DAY'S ENERGY USE PLEDGE

We, The Principal, staff and students, adopt responsible practices in our day's energy use with due regard to the environment. We pledge to avoid using electrical power where not needed. We also pledge to use judiciously the electrical power by using Energy efficient products. We shall practice to switch off all appliances when not in use.

**PURPOSE:** To realistically and comprehensively reduce energy consumption, assure acceptable indoor air quality, and improve energy efficiency on campus through methods that are consistent with a safe, secure, and inviting campus community. As outlined in this policy, energy conservation will be accomplished by developing a proactive and progressive approach to providing energy efficient, responsible, and cost-effective operations on campus. This policy will be reviewed and updated periodically as public awareness, management techniques, and technologies change.

**APPLIES TO:** Faculty, staff, students, and visitors.

**CAMPUS:** KLE Society's SCP Arts, Science & DDS Commerce College, Mahalingpur,

We pledge to speak in open forums for the energy conservation first, Energy Efficiency next and eliminating of High Energy use appliances for better or low energy use ones.

We commit ourselves to the safe operation of all our needs, be it in classrooms, library, canteen, on road, off road, in-campus out-campus as well as at our place of stay.

We adhere to reduce environmental load by efficiently using resources, saving energy, reducing waste, encouraging material recycle, with special emphasis to minimizing emissions of greenhouse gases, ozone depleting substance and particle matter. We endeavor to minimize environmental loads and adopt environmentally friendly technologies when ordering and purchasing necessary products and resources.

We endeavor to attend educational programs and promulgate our close friends and colleagues to follow suite.

We endeavor to ensure that we recognize the essence of this energy use policy by actively and aggressively conducting workshops and training to all in environmental concepts.

We make wide ranging social contribution to close association with the students, teaching staff, administrative staff, housekeeping staff by disclosing energy use (Star rating appliances) information and supporting minimized consumption of energy.

Principal

(proposed)

Indicative template for display at all prominent areas, classrooms, waiting rooms, canteen, library, relaxing areas in the

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## FACTOR CONSIDERATION

It is vital factor to consider the limitations beyond human control. However, our work culture, should be oriented towards the better and safe dwelling. Considering the present health hazards, Not forgetting the ongoing COVID, the quality of air and after effects of the pollution caused by our activities need to be addressed and all the young generations should be educated to mitigate all negative impact.

**Mahalingpur** or **Mahalingapura** in Kannada is a town of Bagalkot district in the Indian state of Karnataka. Agriculture, weaving and jaggery production are the primary industries here. In the past, town was called as Naragatti. Later renamed as Mahalingpur after the gracious appearance of Lord Shri Mahalingeshwara. People speak typical Kannada, understand English and Hindi. The town is known for its picturesque surroundings and pleasant climate. The Ghataprabha River flows through nearby Nandagaon village from its source, which lies to the southwest of the town, and in Kudala sangama gets merge with Krishna. Mahalingpur is one of the major commercial towns in the Bagalkot district. Jaggery and Saari's are common export marketing stuffs here.

Mahalingpur Town Municipal Council, with population of about 36 thousand is Bagalkot district's one of the most populous town municipal council located in Bagalkot district of the state Karnataka in India. Total geographical area of Mahalingpur town municipal council is 9.8 square km's and it is the biggest city by area in the district. Population density of the city is 3679 persons per square km's. There are 23 wards in the city, among them Mahalingpur Ward No 20 is the most populous ward with population of 3083 and Mahalingpur Ward No 08 is the least populous ward with population of 291.

Nearest railway station is Kudchi which is 45 km far from here and Chikkodi road railway station, which is around 46 km far from here. District head quarter of the city is Bagalkot which is around 90 km away. Bangalore is the state head quarter of the city and is 610 km far from here. Yearly average rainfall of the city is 712.10 mm. Maximum temperature here reaches up to 39.40°C and minimum temperature goes down to 11.55°C.

<https://en.wikipedia.org/wiki/Mahalingpur>

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### THOUGHT FOR EVERY MOMENT

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 988 tonnes of paper will be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year.  
**SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.**



All the discussions in the report evolve around the social existence of the citizens, the economic contribution factors, The Industrial establishment and opportunities for entrepreneurship.

#### Education.

Bagalkot district has a number of educational institutions, including Basaveshwara Vidya Vardhaka Sangha, KLE's, BLDE's and Sakri Sangha. A number of colleges are affiliated with Rani Channamma University, Belgaum, Visvesvaraya Technological University, Rajiv Gandhi University of Health Sciences, Ramnagara, Basaveshvara Engineering College (BEC) was established in 1963. S Nijalingappa Medical College, HSK (Hanagal Shree Kumareswar) Hospital and Research Centre, Bagalkote is affiliated with Rajiv Gandhi University of Health Sciences.

The University of Horticultural Sciences (UHS) is headquartered in Navanagar, Bagalkote with its constituent colleges spread across the state.

#### Economy.

Agriculture is the largest employer in Bagalkot, with over 65% of the working population engaged in it; approximately 80% of female workers in Bagalkot are engaged in agriculture. Like most of north Karnataka, Bagalkot is very rich in black soil which is conducive to the cultivation of cotton. Bagalkot's economy was valued at US\$5.6 billion, making it the 12th largest economy in Karnataka. The approximate per capital income is ₹26000/-. The chief crops cultivated are rabi and jowar, as well as groundnut, cotton, maize, bajra, wheat, sugarcane and tobacco. Jowar is largely cultivated because it can be grown during rainy seasons as well as during the winters. The crop also is the chief supply of food for the people. Pulses are also grown in the region, primarily tuvar daal, gram, kulith and mūng daal. Castor oil, linseed and sesamum are also grown in Bagalkot. Water supply for irrigation includes reservoirs such as the Kendur reservoir, which is six miles from Badami and the Muchkund reservoir, which is 4 miles from Bagalkot. Famine due to lack of

#### FACTOR CONSIDERATION.

[Source :https://en.wikipedia.org/wiki/Bagalkot\\_district](https://en.wikipedia.org/wiki/Bagalkot_district)

Keeping civilized and self-sustainable growth contribution, all discussions in the report are based on the factors driving the civilization of the city and the nearby areas and their work culture.

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adequate rains is quite common in Bagalkot. A famine that struck the region in 1901 inflicted considerable financial loss to the agricultural industry in Bagalkot. The district has the fifth highest farmer suicide rate in Karnataka.<sup>[18]</sup> Efficient water management techniques and government sops have only marginally mitigated the repercussions of the drought stricken district.

A sizable proportion of the population also consists of weavers. The chief manufactures are cotton and silk cloths. Large quantities of cotton yarn are also dyed and exported to other parts of the state and country. Most of the immigrants in the district are either money lenders or cloth merchants.

#### Industries.

The focus sectors include agriculture, cement, sugar-based industries, silk and handloom industries.

It is one of the two handloom units (other is Dharwad) in India from where woven khadi is obtained and transported to Karnataka Khadi Gramodyoga Samyukta Sangha based in Hubli (which is the only licensed flag production and supply unit in India).


Many new industries are planning to begin in Bagalkot. New cement industries have been registered and are waiting for the permission to begin. There are other small-scale industries like Cement Pipe Industry which produce cement pipes, Bangle Industries which produce bangles, Match Stick Industries, Agarbatti Industries, Plastic Bag Industries etc. in Bagalkot. At the outskirts of Bagalkot city there are many small-scale industries set up. These come under the Vidyagiri area of Bagalkot city, which is the latest extension of the city. Small-scale industries like Ceramic Tile Industry, tyre industry, Stone Cutting And polishing Industry, milk Dairy etc. are running successfully. At Gaddanakeri there are many limestone industries and brick industries. The limestone industries produce lime for whitewash and painting. The brick industries produce bricks required for the construction of houses. There are local oil industries and oil refineries which produce oil from groundnuts, sunflower, sesamum orientale, cotton etc.

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BAGALKOT WEATHER BY MONTH // WEATHER AVERAGES

Bagalkot	
<u>City</u>	Coordinates: <a href="#">16.1817°N</a> <a href="#">75.6958°E</a> Coordinates: <a href="#">16.1817°N</a> <a href="#">75.6958°E</a>
 <p style="text-align: center;">Bagalkot Location in Karnataka, India</p>	<b>Country</b> <a href="#">India</a>
	<b>State</b> <a href="#">Karnataka</a>
	<b>Region</b> <a href="#">Bavulasaime</a>
	<b>District</b> <a href="#">Bagalkot</a>
	<b>Government Type</b> <a href="#">City Municipal Council (CMC)</a>
	<b>Body</b> <a href="#">Bagalkot CMC &amp; BTDA</a>
	<b>Total Area</b> <a href="#">49.08 km² (18.94 sq. mi)</a>
	<b>Elevation</b> <a href="#">537.06 m (1,762.01 ft)</a>
	<b>Total Population (2011)</b> <a href="#">112,090</a>
	<b>Density</b> <a href="#">2,183/km² (5,650/sq. mi)</a>
	<b>Demonym(s)</b> <a href="#">Bagalkotiens</a>
	<b>Official Languages</b> <a href="#">Kannada</a>
	<b>Time zone</b> <a href="#">UTC+5:30 (IST)</a>
	<b>PIN</b> <a href="#">587101-105</a>
<b>Telephone code</b> <a href="#">08354</a>	
<b>Vehicle registration</b> <a href="#">KA-29, KA-48</a>	
<b>Website</b> <a href="#">bagalkot.nic.in</a>	

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Precipitation / Rainfall (mm)	Max. Temperature (°C)	Min. Temperature	Avg. Temperature (°C)	Month
0	30.2	16.8	23.5	January
3	32.5	18.3	25.4	February
5	35.2	20.8	28	March
30	35.2	22.7	28.4	April
66	35.7	23	29.3	May
80	30.9	22	26.4	June
113	28.3	21.5	24.9	July
87	28.5	21.3	24.9	August
145	29.4	21	26.2	September
124	30.3	20.6	25.4	October
24	29.5	18.4	23.9	November
6	28	16.5	22.7	December

Data: 1982 - 2012

The difference in precipitation between the driest month and the wettest month is 145 mm | 6 inches. The variation in temperatures throughout the year is 6.7 °C | 44.1 °F.

Source : <https://en.climate-data.org/asia/india/karnataka/bagalkot-51062/>

**Average annual rainfall recorded is around 683mm.**

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**KLE Society's**  
**SCP Arts, Science & DDS Commerce College,**  
**Tq: Mudhol, Mahalingpur, Dist: Bagalkot**

**List of Staff Members for Criterion VII**

<b>Sl.No</b>	<b>Name</b>	<b>Designation</b>	<b>Department</b>
1.	Dr. B. M. Patil	Principal	Kannada
2.	Dr. A. M. Chinagundi	Convenor	Kannada
3.	Dr. G. N. Patil	Member	Economics
4.	Smt. S. S. Murari	Member	Physics
5.	Smt. R. S. Munnolli	Member	Commerce
6.	Shri. P. V. Alagouda	Member	Chemistry

**List of IQAC Members**

<b>Sl.No</b>	<b>Name</b>	<b>Designation</b>	<b>Department</b>
1.	Dr. K. M. Awaradi	Coordinator	Agri- Marketing
2.	Dr. S. D. Soraganvi	Assistant Coordinator	Economics

**List of Physically Handicapped Students**

<b>Sl.No</b>	<b>Name</b>	<b>Class</b>
1.	L. P. Janawad	B.A I
2.	A. P. Navi	B.A I
3.	S. S. Kanasageri	B.A I
4.	P. S. Saidapur	B.Com III

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**ACKNOWLEDGEMENT:**

SUNSHUBH TECHNOVATIONS PVT LTD., is pleased to express its sincere gratitude to the management of SCP ARTS AND DD SHIROL COMMERCE COLLEGE @ MAHALINGPUR., for entrusting SUNSHUBH TECHNOVATIONS PVT LTD., with the assignment on Green Earth practices based on Educate, Practice, Advocate & Manage the resources in their educational organization.

We also wish to thank the officials and the maintenance staff for the help rendered during the energy flow study.

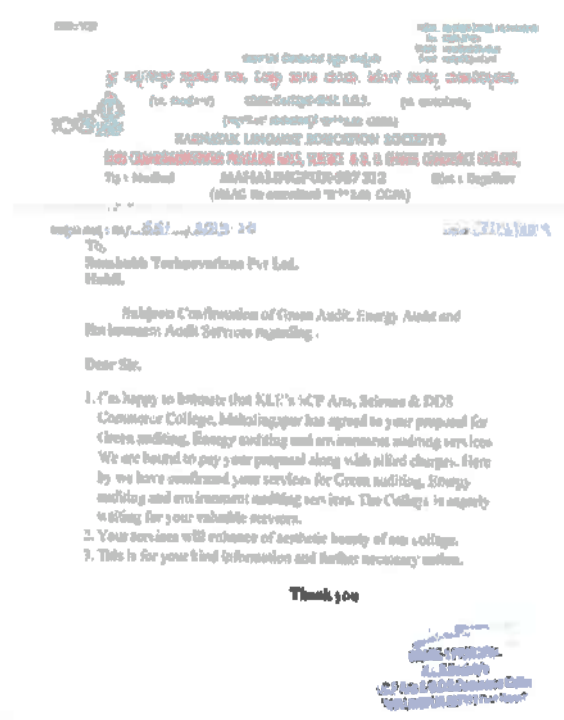
We would fail if we neglect to

appreciate the sincere efforts put in by the 7<sup>th</sup> Criteria Team lead by the able and motivating Principal Dr. B. M. Patil (Principal), and the Students who against all odds have kept the college premises clean to the possible limits. Without the crucial and significant support from the fellow teaching team the energy savings and carbon footprint reduction would not be a reality.

With the motivational support of the management, ground realistic support from teaching team and sincere efforts of the students in incorporating the change (habits) and instructions, the college could effectively declare the reduction in Carbon footprint and optimize the waste reductions.

We are not in a position to compute the carbon foot print at this point of time as the basic information from each of the students is yet to be collected; however, we will discuss the Carbon Foot print in the follow up compliance report.

Wishing the team a great success we deeply express our gratitude and heartfelt "THANKYOU" for allowing us to assess the energy flow scenario there by the ENERGY STATUS.



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Mallikarjun A. Kambalyal. B.E.(E&C).  
Certified Energy Auditors (EA-3485)  
SUNSHUBH TECHNOVATIONS PVT LTD.,



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### **1. LIMITATIONS:**

Our recommendations are in the interest of conservation of Electrical Energy and Green Culture i.e. the reduction in CARBON FOOTPRINT. The compliance to the recommendations will be subjected to meeting the safety and Environmental rules and guidelines.

### **2. AUTHENTICATION & DATE OF ENVIRONMENT AUDIT:**

This ENVIRONMENT Audit has been carried out on 7<sup>th</sup> Jan 2020 under the instructions of Dr. B. M. Patil, Principal, and in the presence of Dr. A. M. Chinagundi and Smt. R. S. Munnoli.

### **3. ABOUT ENVIRONMENT AUDIT:**

KLE's SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR has asked SUNSHUBH TECHNOVATIONS PVT LTD., Hubli., to conduct the Green ENVIRONMENT Audit for their Institution.

In this context, the management of the Institute represented by Dr. B. M. Patil, Principal., interacted with us for the feasibility to reduce energy consumption and adopt green habits.

SUNSHUBH TECHNOVATIONS PVT LTD., represented by Mr. Mallikarjun A. Kambalyal made a detailed study and readings of various appliances were taken in presence of the officials and carried out the ENVIRONMENT audit along with the safety parameters.

Based on the information available and the requirements put before us, it was decided to submit the report placing preference on conservation over efficiency.

We hope the points presented will be self explanatory, if there is need for any clarification, we are open for discussions.

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**LIST OF INSTRUMENTS:**

During the process of the Audit, the following lists of instruments were used.

<b>Sr No.</b>	<b>INSTRUMENT</b>	<b>MAKE</b>	<b>APPLICATION</b>
1	Digital Power Analyser (PC Interfaced)	SCHIVAN ARNOX	Electrical Machinery.
2	Accessories -3000 Amps	ARNOX	Higher load UPTO 3000 Amps,
3	Accessories -200 Amps	ARNOX	UPTO 200 Amps,
4	Thermal Imager	FLIR	Identify loose contacts and bearing losses
5	Power Analyser (Manual)	MECO	Electrical Machinery.
6	Infrared Thermometer	METRAVI	Thermal (Fuel) Energy.
7	Digital (Contact) Temperature & Humidity Meter.	METRAVI	Electrical Machinery. (A/C's And Cooling Towers)
8	Digital Tachometer	METRAVI	Electrical Machinery. (A/C's And Cooling Towers)
9	Lux Meter	METRAVI	General & Task Lighting.
10	Sound Level Meter	METRAVI	Electrical Machinery. Generator Sound Proofing
11	Digital Anemometer	METRAVI	Electrical Machinery. (A/C's And Cooling Towers)
12	Digital KW Meter	METRAVI	Electrical Machinery.
13	Digital Power Factor Meter	METRAVI	Electrical Machinery.
14	Lap Top Computer	HP	To Interface The Instruments For More Accurate - Sophisticated Readings In Sensitive Equipments.
15	Ultrasonic flow meter		Measure liquid flow.
16	Portable Vibration Meter.	METRAVI	Effect Of Filtration - Sewing System. Structural Stability

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17	Live cable detector probe	-	Detect hidden cables for safety audit.
18	Power Analyser – EMM 5	Beluk	For remote communication and detailed audit.
19	Power Analyser – ELITE PRO	Beluk	Power Analyser.
20	ETV meter, KWh & PF meters for site recording.	Secure	
21	PT's for Transformer audits.	KALPA	On field auditing of transformer loading and imbalance evaluation.

Only appropriate instruments will used wherever necessary.

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4. **ONGOING STATUS:**

It's an optimistic & highly dedicated team effort lead by the Principal & the senior staff who have dedicated all their wits & free time to initiate Green Carpet the entire college premises. It is also a fact that there do exist few short comings which however is unintentional & on being trained & educated the campus should look for continued minimized waste generation. With all due appreciation to the management , staff involved & co operation by the students, we have made few suggestions which on implementation, will reduce, demand for water & electrical power. It will also reduce the existing level of pollution to bear minimum.

**NO WASTE – NO POLLUTION – NO HEALTH HAZARD.**

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DISCUSSIONS ON EXECUTIVE SUMMARY:

**DISCUSSIONS ON EXECUTIVE SUMMARY.**

The report discusses about

- Good Practices.
- Organic waste management.
- Water management.
- Rainwater Harvesting Abuse and Use.
- Chemical waste disposal.
- LPG (Fuel ) cylinders storage and management.
- HACCP practices.
- Utility Management.
- Food wastage and waste minimisation.
- Construction waste management.
- Asset management.
- Indoor Air quality.
- Fire Safety training, awareness and placement of utility systems.

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**Geographical layout.**

Before we proceed with the discussions on various aspects of Environment impact. It is important that we look at the geographical spread of the college campus.

**Satellite view of the College campus.**



**Gradient marking to manage rainwater**



**Ideal point for Rainwater pond.**

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Satellite view of the Academic block.  
Suitable for rooftop solar power.

Water availability and the quality of water decides the environment in the campus.

Considering the geographical parameters and weather conditions, water management methodology needs to evolve.

### **GOOD PRACTICES:**

The translucent window glasses up to the height of standing eye sight prevents diversion of attention and possible disturbance.



Transparent window glasses should be placed at all possible

Translucent window glasses should be placed at all possible

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See through windows should be camouflaged with translucent film.

Placing of waste collection bins should be within reach.



Two options are provided. The management can select the method based on cost factor.

If the rural technology is opted, the colour code can be maintained.

Keeping human tendency, not to walk the distance, the waste collection bins should be placed before every room for ease of handling and convenience. Once the people get to the habit the waste collection will automatically be self-driven.

If sufficient bins are placed before every room with colour code i.e., Green bins for organic and compostable waste.



colour.  
Green  
yellow  
red

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Yellow/Red for non-compostable wastes. (The management may choose to have any colour options as required) the manpower required to clear the same will be reduced as well.

These locally sourced bins may be placed all along the campus. We suggest that these bins be colour coded to segregate the waste at source.

This option may look to be off the date. It should be important in placing a small placard as to why hand sewed bins are being put to use.

- The biggest being the empowering the rural youth in being economically self-sufficient.
- Bins are organic and biodegradable. Hence do not contribute to the carbon emissions. Leading to a very innovative Carbon Handprint initiative.
- Readily visible and easy to empty when half full.

## ORGANIC WASTE COMPOST.



Avoid burning organic waste, Instead follow composting to enrich the soil fertility.

Organic waste compost collection bins at the point of source enriches the soil quality.

Segregation of solid waste at source helps minimised time consumption and energy. It also accelerates the composting process.

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Mark the area for dumping construction waste and also declare the area as hazardous and non-safe zone.

**CONSTRUCTION WASTE** should be labelled for proper handling and dispatch.

#### WATER MANAGEMENT.

The institute is located on the first floor. However the voluntary team may be formed to educate the other stake holders in managing the water appropriately.

The images shown are typical methods followed by many of the people for keeping green cover live.



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Water is money. Water is Energy and water is life. Judicious use of water is crucial considering the availability of water we suggest that the team of gardeners get educated on...

How we should water, How much should we water, How often should we water and when to stop watering are few check points. Proper watering is crucial to having the best-looking lawn on the block. Here are some key points:

Since we reside in tropical zone, it is important that we operate the sprinklers after sunset to avoid evaporation and allow the water to percolate deep into the top soil.

- Lawn needs at least 1"-1 ½" of water per week, year-round, during the winter, too.
- It's important to retain moisture content hence, Water deeply 2-3 times per week, rather than daily.
- Watering early in the morning also is favoured, when possible.
- We will need more water during the day hours.
- Should not water the lawns for so long that, water runs down.
- It is important to have automatic sprinklers and also to check them regularly to be sure that we get complete coverage. Going a step further, one can place the moisture sensor and automate the operation of sprinklers if one can afford the system.



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## BATTERY MANAGEMENT :

The batteries regeneration if incorporated, can also be a revenue earning model for the college by educating the students and training them by undertaking third party batteries for re-generation.

This also takes the institute to reducing its Carbon Footprint and closely interacting with the Industries, other educational institutes and the society at large.

First is to enhance the life of these batteries by properly placing them.

All batteries should be placed in well ventilated area. As battery disposal is turning out to be a serious issue, ways to prolong the life of the batteries is very important from the environmental point and also from the Financial implications.



**We will discuss the regenerative system of used and week batteries to enhance the life. It is important to know few points on handling of batteries. BU-703: Health Concerns with Batteries**

**Become familiar with the do's and don'ts when handling batteries.** Batteries are safe, but caution is necessary when touching damaged cells and when handling lead acid systems that have access to lead and sulfuric acid. Several countries label lead acid as hazardous material, and rightly so. Lead can be a health hazard if not properly handled.

### Lead

Lead is a toxic metal that can enter the body by inhalation of lead dust or ingestion when touching the mouth with lead-contaminated hands. If leaked onto the ground, acid and lead particles contaminate the soil and become airborne when dry. Children and foetuses are most vulnerable to lead exposure because their bodies are developing. Excessive levels of lead can affect a child's growth, cause brain damage, harm kidneys, impair hearing and induce behavioural problems. In adults, lead can

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#### THOUGHT FOR EVERY MOMENT

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 988 tonnes of paper will be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year.

**SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE**

cause memory loss and lower the ability to concentrate, as well as harm the reproductive system. Lead is also known to cause high blood pressure, nerve disorders, and muscle and joint pain. Researchers speculate that Ludwig van Beethoven became ill and died because of lead poisoning.

By 2017, members of the International Lead Association (ILA) want to keep the lead blood level of workers in mining, smelting, refining and recycling below 30 micrograms per decilitre (30µg/dl). In 2014, the average participating employee checked in at 15.6µg/dl, but 4.8 percent were above 30µg/dl. (Source Batteries & Energy Storage Technology, Summer 2015.)

In 2019, the University of Southern California published the detection of lead in teeth of children living near the Exide Technologies battery recycling plant in Vernon, California

Lead occurs naturally in soil at 15–40mg/kg level. This level can increase multi-fold near lead battery manufacturing and recycling plants. Soil levels in developing countries, including on the continent of Africa, recorded lead contamination levels of 40–140,000mg/kg. (See [BU-705: How to Recycle Batteries.](#))

**Sulfuric Acid** The sulfuric acid in a lead acid battery is highly corrosive and is more harmful than acids used in most other battery systems. Contact with eye can cause permanent blindness; swallowing damages internal organs that can lead to death. First aid treatment calls for flushing the skin for 10–15 minutes with large amounts of water to cool the affected tissue and to prevent secondary damage. Immediately remove contaminated clothing and thoroughly wash the underlying skin. Always wear protective equipment when handling sulfuric acid.

### **Cadmium**

Cadmium used in nickel-cadmium batteries is considered more harmful than lead if ingested. Workers at NiCd manufacturing plants in Japan have been experiencing health problems from prolonged exposure to the metal, and governments have banned

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disposal of nickel-cadmium batteries in landfills. The soft, whitish metal that occurs naturally in the soil can damage kidneys. Cadmium can be absorbed through the skin by touching a spilled battery. Since most NiCd batteries are sealed, there are no health risks in handling intact cells; caution is required when working with an open battery.

Nickel-metal-hydride is considered non-toxic and the only concern is the electrolyte. Although toxic to plants, nickel is not harmful to humans.

Lithium-ion is also benign — the battery contains little toxic material. Nevertheless, caution is required when working with a damaged battery. When handling a spilled battery, do not touch your mouth, nose or eyes. Wash your hands thoroughly.

Keep small batteries out of children's reach. Children younger than four are the most likely to swallow batteries, and the most common types that are ingested are button cells. Each year in the United States alone, more than 2,800 children are treated in emergency rooms for swallowing button batteries. According to a 2015 report, serious injuries and deaths from swallowing batteries have increased nine-fold in the last decade. The battery often gets stuck in the oesophagus (the tube that passes food). Water or saliva creates an electrical current that can trigger a chemical reaction producing hydroxide, a caustic ion that causes serious burns to the surrounding tissue. Doctors often misdiagnose the symptoms, which can reveal themselves as fever, vomiting, poor appetite and weariness. Batteries that make it through the oesophagus often move through the digestive tract with little or no lasting damage. The advice to a parent is to choose safe toys and to keep small batteries away from young children.

### Safety Tips

- Keep button batteries out of sight and reach of children. Remote controls, singing greeting cards, watches, hearing aids, thermometers, toys and electric keys may contain these batteries.
- Similar to pharmaceutical products, keep loose batteries locked away to prevent access by small children.

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- Communicate the danger of swallowing button batteries with your children, as well as caregivers, friends, family members and babysitters.
- If you suspect your child has ingested a battery, go to the hospital immediately. Wait for a medical assessment before allowing the child to eat and drink.

## Ventilation

Charging batteries in living quarters should be safe, and this also applies to lead acid. Ventilate the area regularly as you would a kitchen when cooking. Lead acid produces some hydrogen gas but the amount is minimal when charged correctly. Hydrogen gas becomes explosive at a concentration of 4 percent. This would only be achieved if large lead acid batteries were charged in a sealed room.

Over-charging a lead acid battery can produce hydrogen sulphide. The gas is colourless, very poisonous, flammable and has the odour of rotten eggs. Hydrogen sulphide also occurs naturally during the breakdown of organic matter in swamps and sewers; it is present in volcanic gases, natural gas and some well waters. Being heavier than air, the gas accumulates at the bottom of poorly ventilated spaces. Although noticeable at first, the sense of smell deadens the sensation with time and potential victims may be unaware of its presence.

As a simple guideline, hydrogen sulphide becomes harmful to human life if the odour is noticeable. Turn off the charger, vent the facility and stay outside until the odour disappears. Other gases that can develop during charging and the operations of lead acid batteries are arsine (arsenic hydride,  $AsH_3$ ) and (antimony hydride,  $SbH_3$ ). Although the levels of these metal hydrides stay well below the occupational exposure limits, they are a reminder to provide adequate ventilation.

## Regeneration of week batteries for the Second/Third lease of life.

Significance...

- The early regeneration results into second tenure of the batteries i.e., another term of 3 to 5 years as per Battery specifications.
- Optimised energy consumption. Thus, reduced cost of operation.
- Delayed disposal results into elimination of environment pollution.
- Reduced impact on CARBON FOOTPRINT.

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## HACCP PRACTICES:

### Sanitary Pad dispenser :

We appreciate the placement of the sanitary pad dispenser and also being used by the members. One improvement is however needed. The custodian of the pads contact details may be displayed. This should help to draw the attention of the stock holder to replenish the dispenser when empty.



### Sanitary pad Incinerator:

The pad incinerator is also found to be working and in order.

It would be important to display the usage instructions in Kannada, Hindi and English so that the members can operate the incinerator by themselves.




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## FIRE PREVENTION & SAFETY :

The fire extinguishers should be placed at the entrance of the room housing dangerous devices and chemistry lab. So that, they are handy when need to be used.

The detailed information chart on fire extinguishers is to be prominently displayed and all staff should be educated and trained.




# PORTABLE FIRE EXTINGUISHERS


### IN CASE OF FIRE:

- Call the fire department immediately.
- Do not use an extinguisher without proper training.
- Know which extinguisher is correct for what type of fire.
- Only use portable extinguishers when the fire is contained to a small area.


### FIRE CLASSIFICATION:




Use for ordinary combustibles, such as wood, paper, cloth, rubber, leather, plastics, and other materials that burn.



Use for flammable gases, such as propane, acetylene, and other gases that burn.




Use for flammable liquids, gases, or solids, such as gasoline, oil, kerosene, and other liquids that burn.




Use for combustible metals, such as magnesium, sodium, potassium, and other metals that burn.


## P. A. S. S. OPERATING PROCEDURE




**PULL** the pin. Hold the extinguisher with the nozzle pointing away from you, and release the locking mechanism.



**AIM** the nozzle at the base of the fire.



**SQUEEZE** the lever slowly and evenly.



**SWEEP** from side-to-side at the base of the flame.

It is also important that the handling instructions are Predominantly displayed. The sample poster is reproduced for replication.

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Type	CLASS A Combustible materials (e.g. paper & wood)	CLASS B Flammable liquids (e.g. petrol & paint)	CLASS C Flammable gases (e.g. butane and methane)	CLASS D Flammable metals (e.g. lithium & potassium)	Electrical Mechanical equipment (e.g. computers & generators)	CLASS F Deep fat fryers (e.g. chip pans)	Comments
CO <sub>2</sub>	✓	✗	✗	✗	✗	✗	Do not use on liquid or electric fires
Foam	✓	✓	✗	✗	✗	✗	Not suited to domestic use
Dry Powder	✓	✓	✓	✓	✓	✗	Can be used safely up to 1000 volts
ABC	✗	✓	✗	✗	✓	✗	Safe on both high and low voltage
Wet Chemical	✓	✗	✗	✗	✗	✓	Use on extremely high temperatures



In case of fire, the appropriate Fire extinguishers should be placed at the entrance but outside the room. The details of such classified Extinguishers is indicated for reference.

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### Placement Gas fuel cylinders:



The LPG and other high pressure cylinders should be placed outside the room in well ventilated area.

If there is any space constraint, it is necessary that the lowest part of the space should be open and free ventilation provided.

The slope should be leading towards the outer wall and proper bund be made to prevent any leakage flowing into the hall/room/laboratory.

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Laying of rainwater opening pavers.



It was suggested that the pavers be made of openings for natural flow of rainwater down under. Since the pavers are already laid, we suggest the holes be drilled at regular intervals so as to make provision for rainwater percolation.

*make holes*



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Directions for the plant

### Medicinal plantation.



The medicinal plantation is well formed. The plant name and explanation is very informative.

One additional task, i.e., The information can be made in Kannada language and posted for everyone to read.

The similar placard may be posted at the entrance and extending the invitation to the citizens to visit the medicinal garden.

This initiative will take the information to the citizens and can help build dialog.

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## VERMICOMPOST.



The organic waste collected may be put to use. The system is already in place. The compost so formed should be exhibited for the information of the farming community through the children coming to college for education.

This may be used to showcase the ways of developing the vermicompost.

The benefits of vermicompost if exhibited, the children can disseminate the same to their parents back home.



KITCHEN COMPOST IN POT



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### Rooftop : Passive cooling.



The rooftop, needs to be white washed so as to avoid roof heating. This should help in keeping the room down below cooler.

The additional benefit of prevention of algae growth also brings about positive change.

### Chemical storage.:



Hazardous chemicals stored in bulk should be moved to a separate room away from childrens access. The required quantity may be placed as and when required to avoid accidental spillage.

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### EXHIBIT GREEN HABITS:

The college administration, should engage its resources in exhibiting Green Habits as discussed.

### ACTION PLAN SUMMARY:

Earmark the action plan.

- Invite subject experts for Tec talks,
- Organize in person panel discussions and interaction to propagate the knowledge and mitigate the problems in practicing the same.
- Prioritize the initiatives and execute.
- Observe the benefits and shortcomings.
- Workout further improvement by involving the staff and students.

### MODE OF ACTION:

- The process of GREEN AUDIT & ENERGY CONSERVATION should be carried out in three steps.
- Good housekeeping practices using available manpower.
- Minor alterations using in house work culture with minimum investments on accessories as discussed.
- Capital investments, which may be required for installation of new methodologies may be taken up on phased manner.

We will be happy to assist you for any further advice/consultancy if required either on Rainwater management or on any of the measures discussed in the report.

We hope the measures are implemented in good spirit and to human convenience and comfort.

For SUNSHUBH TECHNOVATIONS PVT LTD.

Mallikarjun A. Kambalyal. B.E. (E&C)  
Certified Energy Auditors EA-3485



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Notes:

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There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 968 tonnes of paper will be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year.

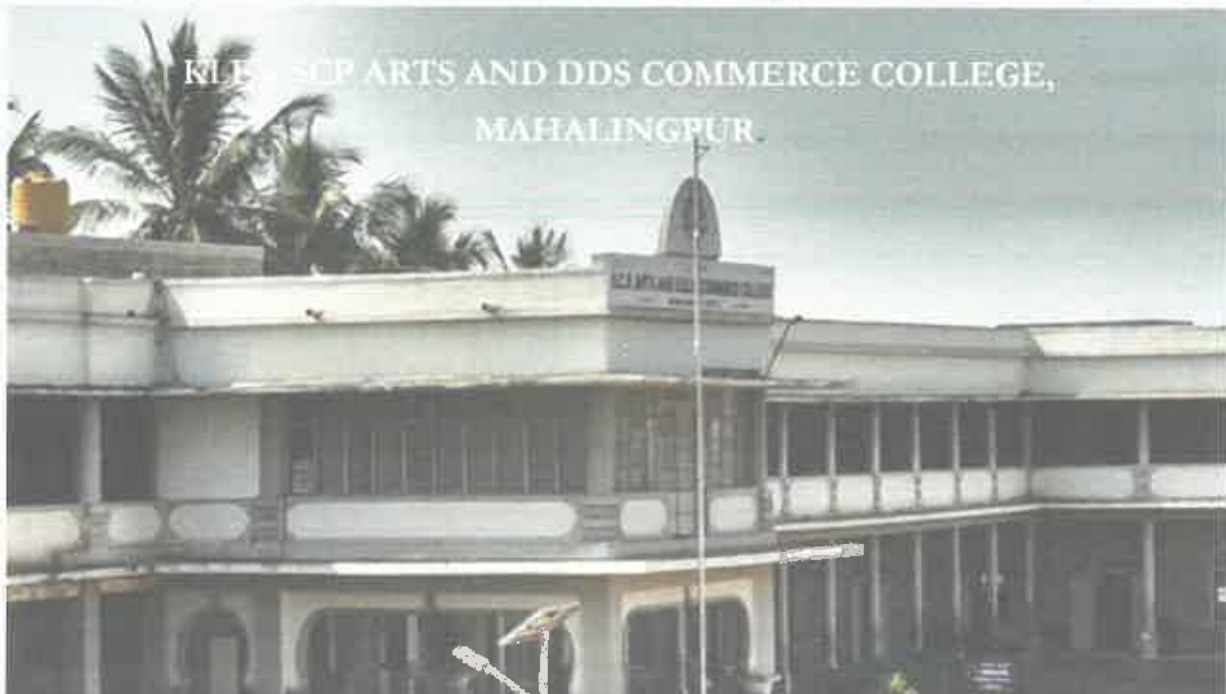
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# ENERGY AUDIT REPORT

## 2019-20

in compliance with the statutory requirements under the  
NAAC accreditation procedures



**Audited by:**

**Principal Lead Auditor:**

**Mallikarjun A Kambalyal.** CEA, ISO 5001, 14001 Lead Auditor.

**SUNSHUBH TECHNOVATIONS PVT LTD.,**

120-2, LGF, 'A' wing, IT Park,  
Hubli - 580029, Karnataka, India.

German off: Neuer Weg 166, 47803 Krefeld,  
Dusseldorf. Germany Anbieter-Nr 1041388



**Website:** [www.sunshubhrenewables.com](http://www.sunshubhrenewables.com)

**Email:** [mallu\\_solar@yahoo.co.uk](mailto:mallu_solar@yahoo.co.uk), [ceo@sunshubhrenewables.com](mailto:ceo@sunshubhrenewables.com)

EXECUTIVE SUMMARY.

Sr No	Observation*	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*	Category
1	Solar Power	Low energy generation	60% to 70% revenue loss.	Re design the layout and configuration.	Nil, under scope of supplier.	Increased energy generation by around 3.5 times	7.1.2
2	Battery placement	Battery shell in conductor loop	Low performance & self-discharge.	Design the stacking arrangements.	In house resources	25% of the cost of the batteries.	7.1.2, 7.1.6
3	Battery regeneration.	Short life span	300% of the cost of the battery.	Subject all batteries to regeneration made.	Rs.20.00 Lacs or as per user agreement	300 %	7.1.2,
4	Electrical	Old tube lights	High energy consumers	LED lights of appropriate ratings.	Rs.80/- to Rs.250/- per unit	Rs.175/- per tube per annum. ROI of 1 years.	7.1.6
5	Natural Lighting	Un cleaned windows and ventilators, forced switching on of tube lights	High energy bills	Clean the windowpanes and allow maximum natural light penetration.	Nil, part of routine, In house manpower	Substantial cost of energy bills on lighting.	7.1.2, 7.1.6
6	Natural Ventilation	Permanently closed ventilators.	Creation of hot air pockets below the ceiling.	Open the Ventilators for easy exit of hot/warm air from the rooms.	Nil, In house manpower	Eliminates use of Electrical Fans and Substantial cost of energy bills	7.1.2, 7.1.6

\* For details, please follow the discussions in the report.

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Criteria 7.1.6

## ENERGY AUDIT COMPLETION CERTIFICATE

I, Mallikarjun A Kambalyal, endorse and confirm that the Energy Audit has been carried out on 7<sup>th</sup> Jan 2020 under the instructions of Dr.B. M. Patil, Principal, KLE's SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR.

This report is generated based on the site visits and evidence collected from the site.

All attempts have been made to evaluate the scope for development and inculcate green practices in the campus and extended throughout the campus. The focus is also laid to make positive impact on the society for a better living.

I also confirm and sign this certificate, in case the institution needs demonstration, my team of professionals shall be happy to do so.

We present this report to much more than the legal or mandatory compliances. This report is tabled in two parts. The first forms the core discussions which are general in nature. The second section is subject specific under the statutory requirements of the NAAC accreditation norms. They are Audit reports on, Green aspects, Energy aspects, Environment aspects, Health aspects and the discussions on net CARBON FOOTPRINT & the CARBON HANDPRINT initiatives.

Any modifications, changes, omissions after the site visit shall be exclusive.



Authorised Auditor.

**Mallikarjun A. Kambalyal** B.E (E&C)

Certified Energy Auditors EA-3485& ISO 50001:2011 & ISO14001:2015 Lead Auditor.



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**BUREAU OF ENERGY EFFICIENCY**



Examination Registration No. : **EA-3485** Serial Number **2838**

Certificate Registration No. : **2838**

**Certificate For Certified Energy Manager**

This is to certify that Mr./Mrs./Ms. **Malikarjun A Kambalyal** Son/Daughter of Mr./Mrs. **Andanappa V Kambalyal** who has passed the National Examination for certification of energy manager held in the month of **April 2006** is qualified as certified energy manager subject to the provisions of Bureau of Energy Efficiency (Certification Procedures for Energy Managers) Regulations, 2010.

This certificate shall be valid for five years with effect from the date of award of this certificate and shall be renewable subject to attending the prescribed refresher training course once in every five years.

His /Her name has been entered in the Register of certified energy manager at Serial Number **2838** being maintained by the Bureau of Energy Efficiency under the aforesaid regulations.

Mr./Mrs./Ms. **Malikarjun A Kambalyal** is deemed to have qualified for appointment or designation as energy manager under clause (f) of Section 14 of the Energy Conservation Act, 2001 (Act No.52 of 2001).

Given under the seal of the Bureau of Energy Efficiency, this **7<sup>th</sup>** day of **February, 2013**

  
Secretary  
Bureau of Energy Efficiency  
New Delhi

Date of attending the refresher course	Secretary's Signature	Date of attending the refresher course	Secretary's Signature
<b>28.01.2020</b>			

**Bureau of energy Efficiency Regd No: EA3485**

## ***Certificate of Successful Completion***

**Intertek**

***This is to Certify that***

***MALLIKARJUN A KAMBALYAL***

***has successfully completed the***

***Intertek***

***CQI & IRCA Certified ISO 14001:2015  
Auditor Conversion Training Course***

*The Course includes the assessment and evaluation of Environmental Management Systems to conform to the requirements of ISO 14001:2015 and ISO 19011:2011*

*This course is certified by the Chartered Quality Institute (CQI) and the International Register of Certificated Auditors (IRCA)  
- IRCA REFERENCE 16093 -*

*The course meets the training requirements for individuals seeking certification under the IRCA Auditor Certification Schemes*



*Authorising Signatures: Vijay's Signature*

*Course Dates: 16<sup>th</sup> - 16<sup>th</sup> July 2017*

*Certificate Number: 47730*

*Membership Application To Be Made Within 14 Days From End Date of Course*

**ISO Certified Lead Auditor. Certificate No: 47730**

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**bsi.**

# BSI Training Academy

This is to certify that

**Mallikarjun A. Kambalyal**

has attended and passed

**Energy Management Systems (ENMS) Auditor/Lead Auditor Training Course  
(ISO 50001:2011)**

Premchand Ramteerthman, Director of Training

Date: 14/04/2016 - 18/04/2016

Certificate Number: ENR-00253448

This certificate is valid for 3 years from the date above for the purpose of registering as an auditor with ICA.



Course number A17563 certified by ICA

...making excellence a habit.

The British Standards Institution is incorporated by Royal Charter  
BSI House, 389 Chiswick Lane, Uxbridge, Middlesex, UK. Tel: +44 (0) 1895 9595  
BSI India, The BSI Group Building (A-2), Plot 1 & 2, Sector 16, Gurgaon, Haryana, India. Tel: +91 (0) 124 934 2000

**ISO Certified Lead Auditor. Certificate No: ENR-00253448**

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Note Sheet

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## Why is this audit being carried out.

## Why it's important to have an Energy Audit

Whether you own or manage a small business, a large commercial facility, or a manufacturing operation, it's important to take advantage of any tips, programs and incentives that will help you save money on your energy bills. There are measures that will generate savings to positively impact your bottom line immediately, as well as longer-term strategic initiatives to assess your needs and stabilize your energy spend in the longer term – which is great news for your budget!

One such initiative is an energy audit. Energy audits reveal your usage patterns, identify waste, over-expenditure and, generally, make you fully cognizant of where your energy dollars are going. This knowledge will enable you to be more efficient with your energy use and be able to track and accelerate savings. Energy Audits may sound expensive or complicated, but they can be free and are easier than you think.

## What is an Energy Audit?

An energy audit is an analysis of a facility, indicating how and where that facility can reduce energy consumption and save energy costs. Its insight to energy efficiency and conservation can lead to significant savings on the company's utility bill.

## Why Should You Get an Energy Audit?

Energy costs are soaring and your business can be at considerable risk if you do not take the guesswork out of your energy usage and the budget you need to cover it. Energy audits identify where your business is wasting energy. Residential and commercial properties account for around 10% of carbon emissions in the US, according to the EPA, which means they are very inefficient and waste huge amounts of energy and... revenue. An energy audit helps by revealing just how and where energy is being wasted. With thousands of commercial energy customers nationwide, we are well-qualified to advise you on which methods are best used for reducing energy waste and overall energy consumption. Let's start with a simple free evaluation of your bills and show you how we have been found to save between 5% and 35% for many of our customers.

In the case of energy, less is more. Lower energy consumption equals lower energy costs. And, of course, less energy consumption is obviously good for the environment.

As you can see, to be truly effective, energy management requires a strategy just like the other aspect of your operation and measures to curb costs can be simple and in some cases free. Gaining more control over your energy costs will improve the general health of your budget. Not only that but reducing your CARBON FOOTPRINT is great for the environment too!

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## Energy audit objectives.

Energy Audit was initiated in the beginning of 1970's, with the motive of inspecting the work executed within an organization, whose exercises could cause risk to the health of inhabitants and the environment. It exposes the genuineness of the proclamation made by the organisation with the concern on health issues. As a consequence of their operations with respect to environmental pollution it is the duty of the organisation to carry out the green audit of the ongoing processes for various reasons, such as,

- To make sure whether one is performing in accordance with the relevant rules and regulations,
- To improve the procedures and aptness of material in use,
- To analyse the potential duties and to determine a way which can lower the cost and to the revenue.

Through green audit one gets adoration as to how to improve the condition of the environment. There are various factors that were forced upon and determine the growth of/or conduct of green audit. Incidents like,

- Decades old Bhopal gas tragedy, that has left its residual effect which still haunts us.
- Our buildings catching fire due to various reasons,
- Industries blowing off taking valuable human lives etc
- People going sick, feeling tired, after long hours of operations in the organization,
- Increased demand of generators due to inconsistent power supply, which has resulted or lead into recent floods and droughts,

are some of the situations to ponder about!

To address various issues in context with human health, green audit is assigned to "Criteria 7" of NAAC (National assessment and accreditation council) accreditation. NAAC is a self-governing organization in India that declares the institutions as Grade "A++", "A+", "A", Grade "B", .... according to the scores assigned at the time of accreditation.

The other intention of organising green audit is to update the environment conditions in and around the institutions i.e., within the compound and outside the compound. It is carried out with the aid of performing certain tasks like waste management, energy consumed, diesel burnt it performing the objective of the organization. Lastly to self-assess the net carbon footprint of the conduct of process in the organization.

## The goals of green audit

- The purpose of carrying out green audit is securing the environment and cut down the threat posed to human health.
- To Make sure that rules and regulations are complied with.

know about  
this Audit  
and the  
objectives...

- Why?
- Where?
- What?
- When?
- How?

### THOUGHT FOR EVERY MOMENT

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 988 tonnes of paper will be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,578 trees per year.

**SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.**

- To avoid the environmental interruptions that are more difficult to handle and their corrections call for high cost.
- To suggest the best protocol for adding to sustainable development.
- To execute the process of the organisation utilising minimum natural resources and efficient use of those resources contributing to minimum waste generation.

### How is the green audit conducted?

#### Pre-audit

- Planning
- selecting the team of auditors both internal and external
- schedule the audit facility
- acquire the background information
- visit areas under audit

#### On site conditions:

- Understand the scope of audit
- Analyse the strengths and weaknesses of the internal controls
- Conduct audit with end user comfort focused and making it easy to perform.
- Collect necessary evidence so that the stakeholders stand to understand how and where they are going wrong in the process of their conduct.
- Post audit draw the report based on the data collected.
- On confirmation of the preliminary report, draw a final report of the observations and inference with accuracy more near to implementable way.
- Discuss various remedial measures for alternatives if required.
- Prepare an action plan to overcome the shortcomings with continual observation on the action plan initiated.

#### Steps under green audit

**Water audit:** Water is one of the cheapest commodities next to the Air we breathe. Although we Indians, use less water in comparison to western countries. However, the extent of pollutants that we leave behind has polluted all the resources including the deep well.

Rainwater harvesting is one of the best techniques that can be adopted by harvesting the rainwater and using it at the time of scarcity. the audit team to observe and investigate the relevant methods that can be adopted and implemented and draw the balance of use of water.

**Waste management audit:** The point of generation of waste, the type of waste generated, i.e., hazardous, recyclable and organically compostable wastes and segregating method at the point of generation for easy and best

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way to handle the same. Evaluating such methods to minimise the use of resources in the process of their management.

**Energy audit:** It deals with use of energy in the conduct of the process. The priority is topmost for conservation over efficiency; hence, energy auditor should always consider not to use the energy if necessary. At best it can be used judiciously.

**Environmental quality audit:** It analyses air quality, noise level and the programs undertaken by the institution for plantation creating awareness of trees around us and how nature provides us with remedial measures within its framework.

**Health audit:** In the process of use of resources and conduct of the activities, they can develop impact on human health, that might be off minutely harmful, cause permanent disorder or may even cause death. Occupational health hazards are discussed in detail and the stakeholders are informed of the same and required necessary remedial measures indicated.

**Renewable energy:** To make in organisation net zero net zero carbon emission use of renewable resources including energy such as solar wind biogas geothermal energies are put into ooh utilisation.

**Carbon handprint:** The net impact All the above energy audits should be to make an organisation contribute zero emissions which are called bye bhai use of water generation of waste use of energy e environmental damage health damage and finally to explore if the campus or direction can go in in contributing to third-party emissions minimising

**Benefits of green audit:** To draw home the benefits, the system has been separated out into various audits as listed above. In doing so, and if audit findings are effectively implemented there are many advantages that can be practised in the process

- Recognise the cost saving methods through waste minimising and managing technologies.
- Point out the prevailing and forth coming complications.
- Authenticate conformity with the legal requirements.
- Empower the organisation to frame a better environmental performance.
- Portray a good image of the institution which helps build better relationships with the group's organisations, stakeholders in and around its operations

Enhance the alertness for environmental guidelines duties and conduct of preparedness for any eventualities due to environmental disasters.

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**DAY'S ENERGY USE PLEDGE**

We, The Principal, staff and students, adopt responsible practices In our day's energy use with due regard to the environment. We pledge to avoid using electrical power where not needed. We also pledge to use judiciously the electrical power by using Energy efficient products. We shall practice to switch off all appliances when not in use.

**PURPOSE:** To realistically and comprehensively reduce energy consumption, assure acceptable Indoor air quality, and Improve energy efficiency on campus through methods that are consistent with a safe, secure, and Inviting campus community. As outlined in this policy, energy conservation will be accomplished by developing a proactive and progressive approach to providing energy efficient, responsible, and cost-effective operations on campus. This policy will be reviewed and updated periodically as public awareness, management techniques, and technologies change.

**APPLIES TO:** Faculty, staff, students, and visitors.

**CAMPUS:** KLE Society's SCP Arts, Science & DDS Commerce College, Mahalingpur,

We pledge to speak In open forums for the energy conservation first, Energy Efficiency next and eliminating of High Energy use appliances for better or low energy use one's.

We commit ourselves to the safe operation of all our needs, be it in classrooms, library, canteen, on road, off road, In-campus out-campus as well as at our place of stay.

We adhere to reduce environmental load by efficiently using resources, saving energy, reducing waste, encouraging material recycle, with special emphasize to minimising emissions of greenhouse gases, ozone depleting substance and particle matter. we endure to minimise environmental loads and adopt environmentally friendly technologies when ordering and purchasing necessary products and resources.

We endure to attend educational programs and promulgate our close friends and colleagues to follow suite.

We endure to ensure that we recognize the essence of this Energy use policy by actively and aggressively conducting workshops and training to all in environmental concepts.

We make wide ranging social contribution to close association with the students, teaching staff, administrative staff, housekeeping staff by disclosing Energy use (Star rating appliances) Information and supporting minimized consumption of Energy.

Principal

(proposed)

Indicative templet for display at all prominent areas, classrooms, waiting rooms, canteen, library, relaxing areas in the campus.

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**FACTOR CONSIDERATION**

It is vital factor to consider the limitations beyond human control. However, our work culture, should be oriented towards the better and safe dwelling. Considering the present health hazards, Not forgetting the ongoing COVID, the quality of air and after effects of the pollution caused by our activities need to be addressed and all the young generations should be educated to mitigate all negative impact.

**Mahalingpur** or **Mahalingapura** in **Kannada** is a town of **Bagalkot district** in the **Indian state** of **Karnataka**. Agriculture, weaving and jaggery production are the primary industries here. In the past, town was called as Naragatti. Later renamed as Mahalingpur after the gracious appearance of Lord Shri Mahalingeshwara. People speak typical Kannada, understand English and Hindi. The town is known for its picturesque surroundings and pleasant climate. The Ghataprabha River flows through nearby Nandagaon village from its source, which lies to the southwest of the town, and in Kudala sangama gets merge with Krishna. Mahalingpur is one of the major commercial towns in the Bagalkot district. Jaggery and Saari's are common export marketing stuffs here.

Mahalingpur Town Municipal Council, with population of about 36 thousand is Bagalkot district's one of the most populous town municipal council located in Bagalkot district of the state Karnataka in India. Total geographical area of Mahalingpur town municipal council is 9.8 square km's and it is the biggest city by area in the district. Population density of the city is 3679 persons per square km's. There are 23 wards in the city, among them Mahalingpur Ward No 20 is the most populous ward with population of 3083 and Mahalingpur Ward No 08 is the least populous ward with population of 291.

Nearest railway station is Kudchi which is 45 km far from here and Chikkodi road railway station, which is around 46 km far from here. District head quarter of the city is Bagalkot which is around 90 km away. Bangalore is the state head quarter of the city and is 610 km far from here. Yearly average rainfall of the city is 712.10 mm. Maximum temperature here reaches up to 39.40°C and minimum temperature goes down to 11.55°C.

<https://en.wikipedia.org/wiki/Mahalingpur>

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All the discussions in the report evolve around the social existence of the citizens, the economic contribution factors, The industrial establishment and opportunities for entrepreneurship.

#### Education.

Bagalkot district has a number of educational institutions, including Basaveshwara Vidya Vardhaka Sangha, KLE's, BLDE's and Sakri Sangha. A number of colleges are affiliated with Rani Channamma University, Belgaum, Visvesvaraya Technological University, Rajiv Gandhi University of Health Sciences, Ramanagara, Basaveshwara Engineering College (BEC) was established in 1963. S. Nijalingappa Medical College, HSK (Hanagal Shree Kumareswari Hospital and Research Centre, Bagalkote is affiliated with Rajiv Gandhi University of Health Sciences.

The University of Horticultural Sciences (UHS) is headquartered in Navanagar, Bagalkote with its constituent colleges spread across the state.

#### Economy.

Agriculture is the largest employer in Bagalkot, with over 65% of the working population engaged in it; approximately 80% of female workers in Bagalkot are engaged in agriculture. Like most of north Karnataka, Bagalkot is very rich in black soil which is conducive to the cultivation of cotton. Bagalkot's economy was valued at US\$5.6 billion, making it the 12th largest economy in Karnataka. The approximate per capital income is ₹26000/-. The chief crops cultivated are rabi and jowar, as well as groundnut, cotton, maize, bajra, wheat, sugarcane and tobacco. Jowar is largely cultivated because it can be grown during rainy seasons as well as during the winters. The crop also is the chief supply of food for the people. Pulses are also grown in the region, primarily tuvar daal, gram, kuliath and mūng daal. Castor oil, linseed and sesamum are also grown in Bagalkot. Water supply for irrigation includes reservoirs such as the Kendur reservoir, which is six miles from Badami and the Muchkundi reservoir, which is 4 miles from Bagalkot. Famine due to lack of adequate rains is quite common in Bagalkot. A famine that struck the region in 1901 inflicted considerable financial loss to the agricultural industry in

#### FACTOR CONSIDERATION.

Source :[https://en.wikipedia.org/wiki/Bagalkot\\_district](https://en.wikipedia.org/wiki/Bagalkot_district)

Keeping civilized and self-sustainable growth contribution, all discussions in the report are based on the factors driving the civilization of the city and the nearby areas and their work culture.

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Bagalkot. The district has the fifth highest farmer suicide rate in Karnataka.<sup>[18]</sup> Efficient water management techniques and government sops have only marginally mitigated the repercussions of the drought stricken district.

A sizable proportion of the population also consists of weavers. The chief manufactures are cotton and silk cloths. Large quantities of cotton yarn are also dyed and exported to other parts of the state and country. Most of the immigrants in the district are either money lenders or cloth merchants.

#### Industries.

The focus sectors include agriculture, cement, sugar-based industries, silk and handloom industries.

It is one of the two handloom units (other is Dharwad) in India from where woven khadi is obtained and transported to Karnataka Khadi Gramodyoga Samyukta Sangha based in Hubli (which is the only licensed flag production and supply unit in India).

Many new industries are planning to begin in Bagalkot. New cement industries have been registered and are waiting for the permission to begin. There are other small-scale industries like Cement Pipe Industry which produce cement pipes, Bangle Industries which produce bangles, Match Stick Industries, Agarbatti Industries, Plastic Bag Industries etc. in Bagalkot. At the outskirts of Bagalkot city there are many small-scale industries set up. These come under the Vidyagiri area of Bagalkot city, which is the latest extension of the city. Small-scale industries like Ceramic Tile Industry, tyre industry, Stone Cutting And polishing Industry, milk Dairy etc. are running successfully. At Gaddanakeri there are many limestone industries and brick industries. The limestone industries produce lime for whitewash and painting. The brick industries produce bricks required for the construction of houses. There are local oil industries and oil refineries which produce oil from groundnuts, sunflower, sesamum orientale, cotton etc.


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## BAGALKOT WEATHER BY MONTH // WEATHER AVERAGES

Bagalkot	
<a href="#">City</a>	Coordinates: <a href="#">16.1817°N</a> <a href="#">75.6958°E</a> Coordinates: <a href="#">16.1817°N</a> <a href="#">75.6958°E</a>
 <p style="text-align: center;">Bagalkot Location in Karnataka, India</p>	<b>Country</b> <a href="#">India</a>
	<b>State</b> <a href="#">Karnataka</a>
	<b>Region</b> <a href="#">Rayachoti</a>
	<b>District</b> <a href="#">Bagalkot</a>
	<b>Government Type</b> <a href="#">City Municipal Council (CMC)</a>
	<b>Body</b> <a href="#">Bagalkot CMC &amp; BTDA</a>
	<b>Total Area</b> <a href="#">49.06 km² (18.94 sq. mi)</a>
	<b>Elevation</b> <a href="#">537.06 m (1,762.01 ft)</a>
	<b>Total Population (2011)</b> <a href="#">112,090</a>
	<b>Density</b> <a href="#">2,183/km² (5,650/sq. mi)</a>
	<b>Demonym(s)</b> <a href="#">Bagalkotiens</a>
	<b>Official Languages</b> <a href="#">Kannada</a>
	<b>Time zone</b> <a href="#">UTC+5:30 (IST)</a>
	<b>Pin</b> <a href="#">587101-105</a>
	<b>Telephone code</b> <a href="#">08354</a>
<b>Vehicle registration</b> <a href="#">KA-29, KA-48</a>	
<b>Website</b> <a href="#">bagalkot.nic.in</a>	

**THOUGHT FOR EVERY MOMENT**

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	January	February	March	April	May	June	July	August	September	October	November	December
Precipitation / Rainfall (mm)	0	3	5	30	66	80	113	87	145	124	24	6
Max. Temperature (°C)	30.2	32.5	35.2	36.2	35.7	30.9	28.3	28.5	28.4	30.3	29.5	29
Min. Temperature (°C)	16.8	18.3	20.8	22.7	23	22	21.5	21.3	21	20.6	18.4	16.5
Avg. Temperature (°C)	23.5	25.4	28	29.4	29.3	26.4	24.9	24.9	25.2	25.4	23.9	22.7

Data: 1982 - 2012

The difference in precipitation between the driest month and the wettest month is 145 mm | 6 Inches. The variation in temperatures throughout the year is 6.7 °C | 44.1 °F.

Source : <https://en.climate-data.org/asia/india/karnataka/bagalkot-51062/>

Average annual rainfall recorded is around 683mm.

#### THOUGHT FOR EVERY MOMENT

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**KLE Society's  
SCP Arts, Science & DDS Commerce College,  
Tq: Mudhol, Mahalingpur, Dist: Bagalkot**

**List of Staff Members for Criterion VII**

Sl.No	Name	Designation	Department
1.	Dr. B. M. Patil	Principal	Kannada
2.	Dr. A. M. Chinagundi	Convenor	Kannada
3.	Dr. G. N. Patil	Member	Economics
4.	Smt. S. S. Murari	Member	Physics
5.	Smt. R. S. Munnolli	Member	Commerce
6.	Shri. P. V. Alagouda	Member	Chemistry

**List of IQAC Members**

Sl.No	Name	Designation	Department
1.	Dr. K. M. Awaradi	Coordinator	Agri-Marketing
2.	Dr. S. D. Soraganvi	Assistant Coordinator	Economics

**List of Physically Handicapped Students**

Sl.No	Name	Class
1.	L. P. Janawad	B.A I
2.	A. P. Navi	B.A I
3.	S. S. Kanasageri	B.A I
4.	P. S. Saidapur	B.Com III

**THOUGHT FOR EVERY MOMENT**

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 968 tonnes of paper will be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year.

**SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.**

**ACKNOWLEDGEMENT:**

SUNSHUBH TECHNOVATIONS PVT LTD., is pleased to express its sincere gratitude to the management of SCP ARTS AND DD SHIROL COMMERCE COLLEGE @ MAHALINGPUR., for entrusting SUNSHUBH TECHNOVATIONS PVT LTD., with the assignment on Green Earth practices based on Educate, Practice, Advocate & Manage the resources in their educational organization.

We also wish to thank the officials and the maintenance staff for the help rendered during the energy flow study.

We would fail if we neglect to appreciate the sincere efforts put in by the 7<sup>th</sup> Criteria Team lead by the able and motivating Principal Dr. B. M. Patil (Principal),

and the Students who against all odds have kept the college premises clean to the possible limits. Without the crucial and significant support from the fellow teaching team the energy savings and carbon footprint reduction would not be a reality.

With the motivational support of the management, ground realistic support from teaching team and sincere efforts of the students in incorporating the change (habits) and instructions, the college could effectively declare the reduction in Carbon footprint and optimize the waste reductions.



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We are not in a position to compute the carbon foot print at this point of time as the basic information from each of the students is yet to be collected; however, we will discuss the Carbon Foot print in the follow up compliance report.

Wishing the team a great success we deeply express our gratitude and heartfelt "THANKYOU" for allowing us to assess the energy flow scenario there by the ENERGY STATUS.



Mallikarjun A. Kambalyal. B.E.(E&C).

Certified Energy Auditors (EA-3485)

SUNSHUBH TECHNOVATIONS PVT LTD.,

**THOUGHT FOR EVERY MOMENT**

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### **1. LIMITATIONS:**

Our recommendations are in the interest of conservation of Electrical Energy and Green Culture i.e. the reduction in CARBON FOOTPRINT. The compliance to the recommendations will be subjected to meeting the safety and Environmental rules and guidelines.

### **2. AUTHENTICATION & DATE OF ENERGY AUDIT:**

This Energy Audit has been carried out on 7<sup>th</sup> Jan 2020 under the instructions of Dr. B. M. Patil, Principal, and in the presence of Dr. A. M. Chinagundi and Smt. R. S. Munnolli.

### **3. ABOUT ENERGY AUDIT:**

KLE's SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR has asked SUNSHUBH TECHNOVATIONS PVT LTD., Hubli., to conduct the Green Energy Audit for their Institution.

In this context, the management of the Institute represented by Dr. B. M. Patil, Principal., interacted with us for the feasibility to reduce energy consumption and adopt green habits.

SUNSHUBH TECHNOVATIONS PVT LTD., represented by Mr. Mallikarjun A. Kambalyal made a detailed study and readings of various appliances were taken in presence of the officials and carried out the ENERGY audit along with the safety parameters.

Based on the information available and the requirements put before us, it was decided to submit the report placing preference on conservation over efficiency.

We hope the points presented will be self explanatory, if there is need for any clarification, we are open for discussions.

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**4. LIST OF INSTRUMENTS:**

During the process of the Audit, the following lists of instruments were used.

Sr No.	INSTRUMENT	MAKE	APPLICATION
1	Digital Power Analyser (PC Interfaced)	SCHIVAN ARNOX	Electrical Machinery.
2	Accessories -3000 Amps	ARNOX	Higher load UPTO 3000 Amps,
3	Accessories -200 Amps	ARNOX	UPTO 200 Amps,
4	Thermal Imager	FLIR	Identify loose contacts and bearing losses
5	Power Analyser (Manual)	MECO	Electrical Machinery.
6	Infrared Thermometer	METRAVI	Thermal (Fuel) Energy.
7	Digital (Contact) Temperature & Humidity Meter.	METRAVI	Electrical Machinery. (A/C's And Cooling Towers)
8	Digital Tachometer	METRAVI	Electrical Machinery.(A/C's And Cooling Towers)
9	Lux Meter	METRAVI	General & Task Lighting.
10	Sound Level Meter	METRAVI	Electrical Machinery. Generator Sound Proofing
11	Digital Anemometer	METRAVI	Electrical Machinery.(A/C's And Cooling Towers)
12	Digital KW Meter	METRAVI	Electrical Machinery.
13	Digital Power Factor Meter	METRAVI	Electrical Machinery.
14	Lap Top Computer	HP	To Interface The Instruments For More Accurate -Sophisticated Readings In Sensitive Equipments.

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15	Ultrasonic flow meter		Measure liquid flow.
16	Portable Vibration Meter.	METRAVI	Effect Of Filtration - Sewing System. Structural Stability
17	Live cable detector probe	-	Detect hidden cables for safety audit.
18	Power Analyser – EMM 5	Beluk	For remote communication and detailed audit.
19	Power Analyser – ELITE PRO	Beluk	Power Analyser.
20	ETV meter, KWh & PF meters for site recording.	Secure	
21	PT's for Transformer audits.	KALPA	On field auditing of transformer loading and imbalance evaluation.

Only appropriate instruments will used wherever necessary.

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## 5. ONGOING STATUS:

It's an optimistic & highly dedicated team effort lead by the Principal & the senior staff who have dedicated all their wits & free time to initiate Green Carpet the entire college premises. It is also a fact that there do exist few short comings which however is unintentional & on being trained & educated the campus should look for continued minimized waste generation. With all due appreciation to the management , staff involved & co operation by the students, we have made few suggestions which on implementation, will reduce, demand for water & electrical power. It will also reduce the existing level of pollution to bear minimum.

**NO WASTE – NO POLLUTION – NO HEALTH HAZARD.**

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### THOUGHT FOR EVERY MOMENT

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 986 tonnes of paper will be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year,  
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DISCUSSIONS ON EXECUTIVE SUMMARY:EXECUTIVE SUMMARY.

Sr No	1	2	3
Observation *	Solar Power	Battery placement	Battery regeneration.
Problems*	Low energy generation	Battery shell in conductor loop	Short life span
Resulting losses*	60% to 70% revenue loss.	Low performance & self-discharge.	300% of the cost of the battery.
Remedial measures*	Re design the layout and configuration.	Design the stacking arrangements.	Subject all batteries to regeneration made.
Capital*	Nil, under scope of supplier.	In house resources	Rs.20.00 Lacs or as per user agreement
Projected savings*	Increased energy generation by around 3.5 times	25% of the cost of the batteries.	300 %
Category 7	7.1.2	7.1.2, 7.1.6	7.1.2, 7.1.6

THOUGHT FOR EVERY MOMENT

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6	5	4	Sr No
Natural Ventilation	Natural Lighting	Electrical	Observation *
Permanently closed ventilators.	Un cleaned windows and ventilators, forced switching on of tube lights	Old tube lights	Problems*
Creation of hot air pockets below the ceiling.	High energy bills	High energy consumers	Resulting losses*
Open the Ventilators for easy exit of hot/warm air from the rooms.	Clean the windowpanes and allow maximum natural light penetration.	LED lights of appropriate ratings	Remedial measures*
Nil, In house manpower.	Nil, part of routine, in house manpower.	Rs.80/- to Rs.250/- per unit	Capital**
Eliminates use of Electrical Fans and Substantial cost of energy	Substantial cost of energy bills on lighting.	Rs.175/- per tube per annum. ROI of 1 years.	Projected savings*
7.1.2, 7.1.6	7.1.2, 7.1.6	7.1.6	Category 7

\* For details, please follow the discussions in the report.

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## Aerial View of the College Campus.



It is also prominently exhibited in all prominent places. Aerial view indicates that the management has shown keen interest in providing the amenities and is focusing on keeping the campus green there by the cool environment within the boundaries of the college.

Sr No	Observation*	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*	Category 7
	Solar Power	Need to explore.	60% to 70% revenue loss.	Re design the layout and configuration.	Nil, under scope of supplier.	Increased energy generation by around 3.5 times	7.1.2

The institute has good space to explore rooftop Solar power to meet the energy requirement of the institute. The Initiative can take the institute to net zero energy.

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Sr No	Observation*	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*	Category
2	Battery placement	Battery shell in conductor loop	Low performance & self-discharge.	Design the stacking arrangements.	In house resource	25% of the cost of the batteries.	7.1.2, 7.1.6

### Placing of Batteries

Criteria 7.1.1, 7.1.2, 7.1.3 and 7.1.5

#### BATTERY PLACEMENT:

The batteries should be placed on an

1. Batteries should be placed on an insulated platform not touching any of the metal frames with top clearance of 6" for ease of handling and breathing.
2. Need cross ventilation for favourable breathing.
3. Provision for periodical checking and maintenance should be made possible without major obstacles.



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In absence of the above placement conditions,

1. The batteries will discharge faster. Loss of energy
2. The charging time and current will increase as there is the return path for self-discharge. Increased Energy Demand.

A well-maintained battery is known to serve for more than 7 years.

The presence of oxidation marks at the point of contact should not develop over the time.

We strongly advice for regenerating the batteries once every 3 to 4 years so that they serve over 15 years in lieu of 5 years under present conditions.

A well-maintained battery will draw less charging power, i.e., saves on energy consumption, delivers more energy per charge thus resulting in better serviced life.

Batteries should be placed well ventilated and avoid dumping of any material on the breathers provided.

For more information on battery regeneration, Contact  
Sunshubh Technovations Pvt Ltd, Hubli  
[ceo@sunshubhrenewables.com](mailto:ceo@sunshubhrenewables.com).

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## BATTERY REGENERATION

Concealed batteries in operation or used batteries should be properly named and placed in proper order. The used batteries should be considered for REGENERATION for the second and subsequent cycles and prolong the disposal as the chemicals cause high level of damage to the environment.

We will discuss the regenerative system of used and week batteries to enhance the life. It is important to know few points on handling of batteries.

BU-703: Health Concerns with Batteries.

### 1. Become familiar with the do's and don'ts when handling batteries.

Batteries are safe, but caution is necessary when touching damaged cells and when handling lead acid systems that have access to lead and sulfuric acid. Several countries label lead acid as hazardous material, and rightly so. Lead can be a health hazard if not properly handled.

#### Lead

Lead is a toxic metal that can enter the body by inhalation of lead dust or ingestion when touching the mouth with lead-contaminated hands. If leaked onto the ground, acid and lead particles contaminate the soil and become airborne when dry. Children and fetuses of pregnant women are most vulnerable to lead exposure because their bodies are developing. Excessive levels of lead can affect a child's growth, cause brain damage, harm kidneys, impair hearing and induce behavioural problems. In adults, lead can cause memory loss and lower the ability to concentrate, as well as harm the reproductive system. Lead is also known to cause high blood pressure, nerve disorders, and muscle and joint pain. Researchers speculate that Ludwig van Beethoven became ill and died because of lead poisoning. By 2017, members of the International Lead Association (ILA) want to keep the lead blood level of workers in mining, smelting, refining and recycling below 30 micrograms per decilitre (30µg/dl). In 2014, the average participating employee checked in at 15.6µg/dl, but 4.8 percent were above 30µg/dl. (Source Batteries & Energy Storage Technology, Summer 2015.)

In 2019, the University of Southern California published the detection of lead in teeth of children living near the Exide Technologies battery recycling plant in Vernon, California.

Lead occurs naturally in soil at 15–40mg/kg level. This level can increase multi-fold near lead battery manufacturing and recycling plants. Soil levels in developing

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countries, including on the continent of Africa, recorded lead contamination levels of 40–140,000mg/kg.

### Sulfuric Acid

The sulfuric acid in a lead acid battery is highly corrosive and is more harmful than acids used in most other battery systems. Contact with eye can cause permanent blindness; swallowing damages internal organs that can lead to death. First aid treatment calls for flushing the skin for 10–15 minutes with large amounts of water to cool the affected tissue and to prevent secondary damage. Immediately remove contaminated clothing and thoroughly wash the underlying skin. Always wear protective equipment when handling sulfuric acid.

### Cadmium

Cadmium used in nickel-cadmium batteries is considered more harmful than lead if ingested. Workers at NiCd manufacturing plants in Japan have been experiencing health problems from prolonged exposure to the metal, and governments have banned disposal of nickel-cadmium batteries in landfills. The soft, whitish metal that occurs naturally in the soil can damage kidneys. Cadmium can be absorbed through the skin by touching a spilled battery. Since most NiCd batteries are sealed, there are no health risks in handling intact cells; caution is required when working with an open battery.

Nickel-metal-hydride is considered non-toxic and the only concern is the electrolyte. Although toxic to plants, nickel is not harmful to humans.

Lithium-ion is also benign — the battery contains little toxic material. Nevertheless, caution is required when working with a damaged battery. When handling a spilled battery, do not touch your mouth, nose or eyes. Wash your hands thoroughly.

Keep small batteries out of children's reach. Children younger than four are the most likely to swallow batteries, and the most common types that are ingested are button cells. Each year in the United States alone, more than 2,800 children are treated in emergency rooms for swallowing button batteries. According to a 2015 report, serious injuries and deaths from swallowing batteries have increased nine-fold in the last decade.

The battery often gets stuck in the oesophagus (the tube that passes food). Water or saliva creates an electrical current that can trigger a chemical reaction producing hydroxide, a caustic ion that causes serious burns to the surrounding tissue. Doctors often misdiagnose the symptoms, which can reveal themselves as fever, vomiting, poor appetite and weariness. Batteries that make it through the oesophagus often move through the digestive tract with little or no lasting damage. The advice to a parent is to choose safe toys and to keep small batteries away from young children.

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## Safety Tips

- Keep button batteries out of sight and reach of children. Remote controls, singing greeting cards, watches, hearing aids, thermometers, toys and electric keys may contain these batteries.
- Similar to pharmaceutical products, keep loose batteries locked away to prevent access by small children.
- Communicate the danger of swallowing button batteries with your children, as well as caregivers, friends, family members and babysitters.
- If you suspect your child has ingested a battery, go to the hospital immediately. Wait for a medical assessment before allowing the child to eat and drink.

## Ventilation

Charging batteries in living quarters should be safe, and this also applies to lead acid. Ventilate the area regularly as you would a kitchen when cooking. Lead acid produces some hydrogen gas but the amount is minimal when charged correctly. Hydrogen gas becomes explosive at a concentration of 4 percent. This would only be achieved if large lead acid batteries were charged in a sealed room.

Over-charging a lead acid battery can produce hydrogen sulphide. The gas is colourless, very poisonous, flammable and has the odour of rotten eggs. Hydrogen sulphide also occurs naturally during the breakdown of organic matter in swamps and sewers; it is present in volcanic gases, natural gas and some well waters. Being heavier than air, the gas accumulates at the bottom of poorly ventilated spaces. Although noticeable at first, the sense of smell deadens the sensation with time and potential victims may be unaware of its presence.

As a simple guideline, hydrogen sulphide becomes harmful to human life if the odour is noticeable. Turn off the charger, vent the facility and stay outside until the odour disappears. Other gases that can develop during charging and the operations of lead acid batteries are arsine (arsenic hydride,  $AsH_3$ ) and (antimony hydride,  $SbH_3$ ). Although the levels of these metal hydrides stay well below the occupational exposure limits, they are a reminder to provide adequate ventilation.

Regeneration of week batteries for the second lease of life.

### REGENERATE YOUR SULPHATED BATTERIES

Battery regeneration is very popular. 80% of the batteries breaking down and losing capacity are sulphated, but can be restored with the right equipment. Battery regenerator successfully replaces sulphation by active material thanks to an electrical high-frequency pulsation process. This process restores the battery capacity, giving you the ability to reuse old and sulphated batteries. You can also use the battery regenerator for annual maintenance to considerably prolong the lifespan of your batteries. The battery regenerator can be used in every lead-acid-based battery: starter batteries, stationary batteries, traction & semi-traction batteries, Ni-Cad batteries ... Since the college uses BATTERIES in large numbers, the

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management can consider to procure one unit at the centralised station in the college campus.

Sr No	Observation*	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*	Category
3	Battery regeneration.	Short life span	300% of the cost of the battery.	Subject all batteries to regeneration made.	Rs.20.00 Lacs or as per user agreement	300 %	7.1.2, 7.1.6

### Necessity and Issues

It is customary in the present energy scenario to use Batteries either in our office or working environment. In continuation, The old week batteries are a nuisance as they need to be discarded in to the environment for further process. Which is a costly option both in terms of Health and pollution issues. Let us review our use of application and consider if we can improve our battery use methods. A brief note, before we consider to take corrective step.

Lead-acid batteries are widely used as important power supply devices that include automotive, uninterruptible power supply (UPS), telecommunication systems and various traction duties.

Lead-acid batteries are the workhorse of the rechargeable battery systems for its reliability, low cost, and good operational life. Predictably, approximately million tons waste batteries are generated every year and the production of lead-acid batteries will continue to rise even more sharply with sustained and rapid development of economy. The lead-acid battery is a complex industrial product, constituted by several different materials, the consequence was very serious which

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often caused much property loss, casualties and environment pollution once accidents happen

Based on "Technical Guidelines for Environmental Risk Assessment on Projects" ^HJ/T169-2004^ and in consideration of the characteristics of the chemical compositions and contents, a framework of environmental risk assessment framework on lead-acid batteries was established. The work procedure included risk identification, sources analysis, pollution forecast, and defensive measures. By analysing the environmental risk assessment of lead-acid batteries, the study opined for directions both for the preventive measures and safe use, according to the forecast results of lead-acid batteries.

### **Risk Identification of Lead-acid Batteries**

Lead-acid batteries generally consist of four parts, which are electrolyte, lead and lead alloy grid, lead paste, and organics and plastics, which included lots of toxic, hazardous, flammable, explosive substances that can easily create potential risk sources. The materials contained in lead-acid batteries may bring about lots of pollution accidents such as fires, explosions, poisoning and leaks, contaminating environment and damaging ecosystem. The main chemical compositions and contents of spent lead-acid batteries are listed below.

**Environmental effects of lead** can end up in water and soils through corrosion of leaded pipelines in a water transporting system and through corrosion of leaded paints. ... Lead accumulates in the bodies of water organisms and soil organisms. These will experience health effects from Lead poisoning.

The main chemical compositions and contents of spent lead-acid batteries

Compositions	Contents (wt.%)
Electrolyte	11-30%
Lead and lead alloy grid	24-30%
Lead paste	30-40%
Organics and plastics	22-30%

The recognition & scope of lead-acid batteries, mainly focused on the pollutants involved in the process of centralized recovery, Storage areas and transport.

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Based on "Technical Guidelines for Environmental Risk Assessment on Projects" and "Identification of hazard installations for dangerous chemicals"

### Battery Regeneration

With change in times, new solutions keep coming up. One such option is to Regenerate the dead or non-usable batteries. Energetic Plus battery regenerator successfully removes sulphating due to an electrical high-frequency pulsation process.

This process restores the battery capacity, giving you the ability to reuse old and sulphated batteries. You can also use the battery preconditioner for annual maintenance to strongly prolong the lifespan of your batteries.

Main Benefits are :

- Removes excessive sulphate
- Prolongs the lifespan of your battery
- Generates detailed reports in Word, Excel or PDF
- Fully automatic, easy to handle
- Free software included with wireless data transfer to computer
- Combination of charging/discharging
- Works with all types of lead-acid-based batteries:
  1. Gel batteries,
  2. Traction (semi-) batteries,
  3. Starter batteries,
  4. Stationary Batteries.



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**The financials and Return on Investments are:**

First Investment and periodical expenses.		Earnings and Units Regenerated.	
<b>Cost of Initial Capital Comprehensive.</b> The system includes cost of Regeneration system, Digital Battery media Tester One Computer preloaded with Battery Monitoring System with required Report generating Templet. And other tools.	22,00,000	Monthly units of Batteries for regeneration targeted	45
Provision for GST charges	3,96,000	Cost of regenerating the batteries.	500
Energy Bills for the year @ Rs.640 per Battery	28,800	Cost of a new 120Ah battery is considered to be 10000	
Manpower for regular attendance – in house.	In-house	For Automobile batteries which are 65Ah, we may consider connecting in Parallel.	
Total first Year Capital cost.	26,24,000	Monthly Revenue	135000
Monthly Expenses recurring	₹500/- per Battery.	Monthly Net Earnings after expenses	107600
<b>Return on Investment Computation.</b>	22+2	GST refund on (If Considered) sales	24300
Space required for the regeneration operation.	100 sqft	Net GST recovery in months	Can be offset.

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The rest of the regeneration capacity/option can be extended to sister (group) concerns. In addition, the positive impact on the environment and health benefits with delayed investment on new batteries are few added feature.

Putting the Batteries into Regeneration cycle once every two years, the life of the Batteries can be enhanced to 12-15 years.

**Hence the Future Value of Capital over the Rupee.**

It may also be considered under the soft skill training to generate self employment. A town like Mahalingpur with most of the houses using INVERTER and the economy driven by agricultural industries, the battery regeneration should be a viable self-employment to couple of students. Thus the institute may consider to act as a catalyst in the battery management.

Observati on*	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*	Category
4 Electrical	Old tube lights	High energy consumers	LED lights of appropriate ratings.	Rs.80/- to Rs.250/- per unit	Rs.175/- per tube per annum. ROI of	7.1.6
5 Natural Lighting	Un cleaned windows and	High energy bills	Clean the windowpan es and allow maximum natural light	Nil, part of routine, in house manpower.	Substantial cost of energy bills	7.1.2, 7.1.6

We find use of T8 & T12 tube lights. It is wise to replace the same with LED tube lights on immediate basis. Considering the energy savings, the wait for there failure may not be justified.

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We also suggest to make best use of natural lighting



In the above roof, it may be considered to replace couple of the Galvalume sheets with green tinted Translucent (frp) sheets as below.

It is also observed that the lights are left switched ON at majority of places during daylight, thus calling for wastage of electrical power. Thus causing financial losses to the management and energy loss to the country.

**Solution:**

It is therefore required to install Light Intensity Sensors in all the rooms.

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Lighting improvements should be carried out by using T5/LED or The Induction Light systems in lieu of normal tube lights. If the finance department permits, it is advised to install 40W Induction lamps in all classrooms.

Source : Can be locally procured. However the load-based selection is key aspect in its installation. To set the visibility, the intensity of natural light is much stronger and hence LUX based setting doesn't work. Hence the technical supervision is key aspect.



We suggest to allocate this to the Physics stream of students to understand the science and application of technology.

#### Light Intensity Sensor requirement.

It may be seen that the Light is illuminated. However, the brightness on the students is seen to be coming from the sides. The shadow indicates natural light coming from the windows is brighter. Natural light is more predominant than the tube light. Hence tube light being switched off has no adverse effect. However, it would save on the energy consumption and contribute to green practices.

NATURAL LIGHTING: **Category 7.1.1, 7.1.2, 7.1.3 and 7.1.5**

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Sr No	Observation *	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*	Category 7
6	Natural Ventilation	Permanently closed ventilators.	Creation of hot air packets below the ceiling.	Open the Ventilators for easy exit of hot/warm air from the rooms.	Nil, In house manpower.	Eliminates use of Electrical Fans and Substantial cost of energy	7.1.2, 7.1.6

The natural ventilators are missing in the top floor class rooms. We also see that the roof is of Galvalume sheets. This makes the room hotter and more intolerable during the hot days. In absence of cross ventilation, the room turns out to be a oven. WE

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strongly suggest that the rooms be provided with cross ventilation just below the roof, making it easy for the hot air to vent out by thermosyphon.



We also suggest to use BLDC fans in lieu of normal ceiling fans which are energy intensive.

## WHY SUPER ENERGY EFFICIENT CEILING FANS?

### Regular old ceiling fans

Ceiling fans escape one's mind when thinking about reducing electricity cost. This forgotten appliance contributes significantly to electricity consumption due to its numbers and hours of usage. The following estimation supports this claim. A regular ceiling fan (1200 mm span) consumes about 75 W at the highest speed. There are over 400 million regular ceiling fans in India and each of them creates an electricity demand about 39W\* (consumption at medium speed).

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## Super energy efficient ceiling fans

At present Brushless Direct Current (BLDC) ceiling fan is the popular choice of [super energy efficient ceiling fans](#) in India. There are two premier BLDC ceiling fan brands in India – [Superfan](#) (Versa Drives Private Limited) and [Gorilla fans](#) (Atomberg Technologies)\*\*. These ceiling fans (1200mm span) consume 35W at the highest speed so they save over 50% of electricity consumption.

The higher efficiency comes with no compromise in air delivery. Now consider replacing all the ceiling fans in India with [best energy saving ceiling fan](#). The reduction in electricity demand created by ceiling fans will be:

Please contact M/s **VERSA DRIVES PRIVATE LIMITED**  
38 B, Vadakku Thottam Part  
Idikaral, Coimbatore  
Tamil Nadu, India 641022

Tel: 0422-2972798 / 2972799 / 2972800

Reference to the audit report may be made to avail additional discount.

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**EXHIBIT GREEN HABITS:**

The college administration, should engage its resources in exhibiting Green Habits as discussed.

**ACTION PLAN SUMMARY:**

- Earmark the action plan.
- Invite subject experts for Tec talks,
- Organize in person panel discussions and interaction to propagate the knowledge and mitigate the problems in practicing the same.
- Prioritize the initiatives and execute.
- Observe the benefits and shortcomings.
- Workout further improvement by involving the staff and students.

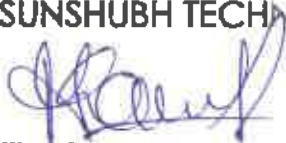
**MODE OF ACTION:**

- The process of GREEN AUDIT & ENERGY CONSERVATION should be carried out in three steps.
- Good housekeeping practices using available manpower.
- Minor alterations using in house work culture with minimum investments on accessories as discussed.
- Capital investments, which may be required for installation of new methodologies may be taken up on phased manner.

We will be happy to assist you for any further advice/consultancy if required either on Rainwater management or on any of the measures discussed in the report.

We hope the measures are implemented in good spirit and to human convenience and comfort.

For SUNSHUBH TECHNOVATIONS PVT LTD.,



Mallikarjun A. Kambalyal. B.E. (E&C)  
Certified Energy Auditors EA-3485

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Notes:

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# GREEN AUDIT REPORT

Year - 2018-19



SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR.

**TARGETED TO  
GREEN EARTH PRACTICES  
BASED ON  
EDUCATE, PRACTICE, ADVOCATE and MANAGE.**

Conducted by:

**Mallikarjun A. Kambalyal** B.E (E&C)  
Certified Energy Auditors EA-3485

**Sunshubh Renewables & Research Centre**

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Ph: 0836-2350505, +91 9449033505

Website: [www.sunshubhrenewables.com](http://www.sunshubhrenewables.com) Email: [ceo@sunshubhrenewables.com](mailto:ceo@sunshubhrenewables.com)

THOUGHT FOR EVERY MOMENT

There are about 19,00,00,000 students in INDIA. If every student saves one sheet per day, 19,00,00,000 sheets of paper meaning 988 tonnes of paper will be saved every day. This is equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year, SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.

# GREEN AUDIT REPORT

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EXECUTIVE SUMMARY.

Sr No	Observation*	Problems*	Resulting losses*	Remedial measures*	Capital*	Projected savings*
1	Rain Water Management	No serious water problem seen	Future shortage of water	Perforated Pavers and water management system.	Yes, Capital intensive	Improved quality of water and high yield. Calls for reduced pumping hours.
2	Solid Waste Management	Spilling of waste	Dirty used packages in and around the college	Incorporate need for cleanliness and place waste collection bins.	Rs.4500/- per set	Reduced cleaning hours and good hygienic conditions.
3	Health Hazard	Sanitary pads disposal provision.	Open area disposal	Incinerator placed at convenient point.	Rs. 10000/- to 15000/-	Clean and safe health.
4	Electrical	Old tube lights	High energy consumers	T5/LED or induction* lights of appropriate ratings.	Rs.680/-per unit	Rs.300/- per tube per annum. ROI of 2 years.
5	Natural Lighting	Un cleaned windows and ventilators, Forced switching on of tube lights	High energy bills	Clean the window panes and allow maximum natural light penetration.	Nil, In house manpower.	Substantial cost of energy bills on lighting.

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6	Natural Ventilation	Permanently closed ventilators.	Creation of hot air pockets below the ceiling.	Open the Ventilators for easy exit of hot/warm air from the rooms.	Nil, In house manpower.	Eliminates use of Electrical Fans and Substantial cost of energy bills
7	Thermal Imager					
* For details please follow the discussions in the report.						

GREEN AUDIT REPORT

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GREEN AUDIT REPORT

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## ACKNOWLEDGEMENT:

SUNSHUBH RENEWABLES & RESEARCH CENTRE is pleased to express its sincere gratitude to the management of SCP ARTS AND DD SHIROL COMMERCE COLLEGE @ MAHALINGPUR., for entrusting SUNSHUBH RENEWABLES & RESEARCH CENTRE with the assignment on Green Earth practices based on Educate, Practice, Advocate & Manage the resources in their educational organization.

We also wish to thank the officials and the maintenance staff for the help rendered during the energy flow study.

We would fail if we neglect to appreciate the sincere efforts put in by the Faculty

Dr. B. M. Patil (Principal),

Dr. K M Awaradi (IQAC Co-Ordinator)

Dr. (Smt)A M chinagundi Criteria 7 coordinator.

and the Students who against all odds have kept the college premises clean to the possible limits. Without the crucial and significant support from the fellow teaching team the energy savings and carbon footprint reduction would not be a reality.

With the motivational support of the management, ground realistic support from teaching team and sincere efforts of the students in incorporating the change (habits) and instructions, the college could effectively declare the reduction in Carbon footprint and optimize the waste reductions.

We are not in a position to compute the carbon foot print at this point of time as the basic information from each of the students is yet to be collected; however, we will discuss the Carbon Foot print in the follow up compliance report.

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Wishing the team a great success we deeply express our gratitude and heartfelt "THANKYOU" for allowing us to assess the energy flow scenario there by the GREEN STATUS.

Mallikarjun A. Kambalyal. B.E.(E&C).

Certified Energy Auditors (EA-3485)

SUNSHUBH RENEWABLES & RESEARCH CENTRE

GREEN AUDIT REPORT

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## LIMITATIONS:

Our recommendations are in the interest of conservation of Electrical Energy and Green Culture i.e. the reduction in CARBON FOOTPRINT. The compliance to the recommendations will be subjected to meeting the safety and Environmental rules and guidelines.

## AUTHENTICATION & DATE OF GREEN AUDIT:

This Green Audit has been carried out on 14<sup>th</sup> June 2019 under the instructions of Dr. B. M. Patil (Principal) and in the presence of Smt G N Patil and Dr. K M Awaradi

## ABOUT GREEN AUDIT:

SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR has asked SUNSHUBH RENEWABLES & RESEARCH CENTRE, Hubli., to conduct the Green Energy Audit for their Institution.

In this context, the management of the Institute represented by Dr. B. M. Patil (Principal) interacted with us for the feasibility to reduce energy consumption and adopt green habits.

SUNSHUBH RENEWABLES & RESEARCH CENTRE represented by Mr. Mallikarjun A. Kambalyal made a detailed study and readings of various appliances were taken in presence of the officials and carried out the GREEN audit along with the safety parameters.

Based on the information available and the requirements put before us, it was decided to submit the report in two parts,

GREEN AUDIT where in pollution Preventive measures are necessary  
ELECTRICAL ENERGY EFFICIENCY – CONSERVATION within the college &

We hope the points presented will be self explanatory, if there is need for any clarification we are open for discussions.

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**LIST OF INSTRUMENTS:**

During the process of the Audit, the following lists of instruments were used.

Sr No.	INSTRUMENT	MAKE	APPLICATION
1	Digital Power Analyser (PC Interfaced)	SCHIVAN ARNOX	Electrical Machinery.
2	Accessories -3000 Amps	ARNOX	Higher load UPTO 3000 Amps,
3	Accessories -200 Amps	ARNOX	UPTO 200 Amps,
4	Thermal Imager	FLIR	Identify loose contacts and bearing losses
5	Power Analyser (Manual)	MECO	Electrical Machinery.
6	Infrared Thermometer	METRAVI	Thermal (Fuel) Energy.
7	Digital (Contact) Temperature & Humidity Meter.	METRAVI	Electrical Machinery. (A/C's And Cooling Towers)
8	Digital Tachometer	METRAVI	Electrical Machinery.(A/C's And Cooling Towers)
9	Lux Meter	METRAVI	General & Task Lighting.
10	Sound Level Meter	METRAVI	Electrical Machinery. Generator Sound Proofing
11	Digital Anemometer	METRAVI	Electrical Machinery.(A/C's And Cooling Towers)
12	Digital KW Meter	METRAVI	Electrical Machinery.
13	Digital Power Factor Meter	METRAVI	Electrical Machinery.
14	Lap Top Computer	HP	To Interface The Instruments For More Accurate -Sophisticated Readings In

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			Sensitive Equipments.	
15	Ultrasonic flow meter		Measure liquid flow.	
16	Portable Vibration Meter.	METRAVI	Effect Of Filtration - Sewing System. Structural Stability	
17	Live cable detector probe	-	Detect hidden cables for safety audit.	
18	Power Analyser – EMM 5	Beluk	For remote communication and detailed audit.	
19	Power Analyser – ELITE PRO	Beluk	Power Analyser.	
20	ETV meter, KWh & PF meters for site recording.	Secure		
21	PT's for Transformer audits.	KALPA	On field auditing of transformer loading and imbalance evaluation.	

Only appropriate instruments will used wherever necessary.

GREEN AUDIT REPORT

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## ONGOING STATUS:

It's an optimistic & highly dedicated team effort lead by the Principal & the senior staff who have dedicated all their wits & free time to initiate Green Carpet the entire college premises. It is also a fact that there do exist few short comings which however is unintentional & on being trained & educated the campus should look for continued minimized waste generation. With all due appreciation to the management , staff involved & co operation by the students, we have made few suggestions which on implementation, will reduce, demand for water & electrical power. It will also reduce the existing level of pollution to bear minimum.

GREEN AUDIT REPORT

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## DISCUSSIONS ON EXECUTIVE SUMMARY:

### RAIN WATER MANAGEMENT

#### ROAD WATER RUNOFF:

The water that hits the road, flows along with it, there are no exits points provided & hence would flood the low lying areas.

The runoff water will erode with top layer starting from the entrance.

The fact that Water & Tar (Bitumen) do not go hand in gloves, the tarred road will start losing its strength & degrade quite fast against its specified standard time. Hence, it is very important that water is immediately moved out of the Tarred area for better roads & for the longevity.

#### SOLUTION:

Advised to make way to the Rain water along the curb stones placed on either side. At regular intervals of 10ft and let it flow to the soil/drain path.

Leakage of water



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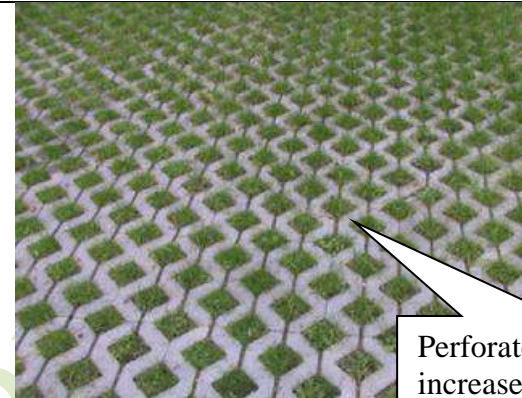
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### CONCRETE PAVERS:

It is observed that the part of the open area in the college has been paved. The Rain water will runoff into adjoining areas. Hence, acting against the interest of water conservation measures & depriving the perennial plants around it from natural watering system.

### SOLUTION:

It would be appreciated if the perforated pavers are used in lieu of the present system. This will help in increasing the greenery in addition to managing the Rainwater & preventing possible flooding.



Perforated Pavers, increase water percolation, prevent flooding and gives decorated flooring too.



GREEN AUDIT

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**GARDEN:**

The college has initiated the creative approach by using the backyard for rose garden. This is highly appreciated all the debris has been removed and the area put to good use. However few improvements in interest of self sustenance. The run off hits tender rose saplings which will disturb the root settling & erode the soil. It is advised to take the terrace water down to the ground through structured piping. This will help in percolation of rain water at all levels & healthy growth of the saplings.

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WATER MANAGEMENT:

Watering the plants in excess hampers the healthy growth, it also result into wastage of water & increase manpower.

Water management is advised as shown in the illustration here, using the waste plastic pet bottles. This will help in surface evaporation loss. For larger plants it is advised to incorporate mulching & using organic waste & cover with news paper/ waste paper. The significance of news paper to cover the mulched area draws the attention of the students & the visitors. Thus creating a platform for education & knowledge sharing.

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## SOLID WASTE MANAGEMENT

It is highly appreciated & worth noticing the level of awareness of spillage. It was noticed that the college campus was maintained very clean & spitting Gutka was rarely observed. To keep the good going, it is important that we facilitate the provision for waste disposal. Hence, it is advised to place waste segregation bins. The set of Green & yellow waste bins should be placed @ place of easy access so that the waste particles are dumped in appropriate place. It is also important to mark what waste should be put in which bin i.e. Green Bin for organic waste & wet paper waste, Yellow Bin for plastic & dry paper. Ease of approach should make the clean & green practices self sustainable.

By incorporating the segregation of the solid waste at the point of its source will make the task of handling it at the Vermicompost pit easy and time saving.



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### ORNAMENTAL & MEDICINAL GARDEN:

The Botany Department has created ornamental garden & medicinal garden. Although they are in early days, it creates an environment where the students get to work on their growth & learn their importance. Visit to these parks more frequently & on regular intervals & brings one nearer to the nature, it also helps to avoid long distance trips to conduct study on these plants



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GREEN AUDIT REPORT

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**HEALTH HAZARD:**

It is learnt that the ladies room and the girl's room have not been provided with the Sanitary Pad incinerator. In absence of the same, the pads could be either left unattended or are disposed off in open area, this causes unhealthy leaving conditions and at times an embarrassment too. Hence it is necessary that the issue is addressed with top priority.

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## ELECTRICAL

### Sensor.

We have not been educated on the resource management. However, the same may be exhibited by installing occupancy sensor. Occupancy sensor looks for human presence in the room and sends a signal to the control switch to switch on the lights and fans.

Looking at the way the lights are left switched on the last person in the room does not understand the importance of the electrical energy.

When Occupancy sensor is installed, the device sends a message to all the students and faculty and the discussions among the students is in itself a way to educate the mass. Hence it is important to execute the project.



Occupancy  
Sensor

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## Batteries Placement

It is important to understand the significance of the Energy use implication. The use of electrical power has been observed to be unnecessary. The administration should initiate to keep all unwanted and unused appliances switched off.

It is observed that the lights are left switched ON at majority of places and thus causing huge financial losses to the management and energy loss to the country. It is therefore required to install Occupancy Sensors in all the rooms starting from least occupied rooms to busy class rooms.

Lighting improvements should be carried out by using T5/LED or The Induction Light systems in lieu of normal tube lights. If the finance department permits, it is advised to install 40W Induction lamps in all class rooms. A small class room can be illuminated by one Induction Lamp by replacing for tube lights of 40Watts. Larger rooms can be illuminated by two such lamps.



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**NATURAL LIGHTING**

The windows in the building should be cleaned and kept as transparent as possible to allow natural day light. This action can avoid or eliminate the use of electrical lights.

Induction Lights: These are new and latest technology products. These lights fit into Indian conditions, like High voltage fluctuations 0-400 Volts on single phase, Instant switch on, no aging effect, works on 97-99% efficiency (0.97-0.99 PF), Anti glare, non flickering, True day light conditions. Comes with Five years of unconditional warranty/Guarantee. Range is available in 23W, 40W, 50W, 80W, 100W, 120W, 150W, 200W, 300W, 400W etc.,



Induction Lamp

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### CLEANING OF WINDOWS:

It is found that the windows have not been maintained clean which calls for switching on internal lights. If the windows are clean at regular intervals it will help in increasing the illumination level in the room. Thus preventing switching on lights during day light.

If in case glasses are seriously damaged (scratched), then is better to replace.



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## NATURAL VENTILATION

The ventilators are choked and creating a oven like atmosphere in the room.

Open out the ventilators for free movement of air.

In colleges cameras are switched off, unless there are exams or meetings .



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## Windows have been blocked by cupboards.

It has been observed that the ventilators remain closed all the time. Thus, the fans are being used. The college premises is well engineered to allow the natural breeze to flow through & maintained comfortable weather conditions. Hence, we strongly advise to keep all the ventilators' clean & open. If possible, work with wall mounted Fans to act in line with natural theory of science.



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### ACTION PLAN SUMMARY:

Earmark the action plan.

Prioritize the initiatives and execute.

Observe the benefits and shortcomings.

Workout further improvement by involving the staff and students.

### MODE OF ACTION:

The process of GREEN AUDIT & ENERGY CONSERVATION should be carried out in three steps.

Good housekeeping practices using available manpower.

Minor alterations using in house work culture with minimum investments on accessories as discussed.

Capital investments, which may be required for installation of new Energy Efficient Equipments.

For SUNSHUBH RENEWABLES & RESEARCH CENTRE

Mallikarjun A. Kambalyal. B.E. (E&C)

Certified Energy Auditors EA-3485

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GREEN AUDIT REPORT

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# GREEN AUDIT COMPLIANCE REPORT

Year : 2017-18

SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR.

**TARGETED TO GREEN EARTH PRACTICES BASED ON  
EDUCATE, PRACTICE, ADVOCATE and MANAGE.**

Conducted by:

Mallikarjun A. Kambalyal B.E (E&C)  
Certified Energy Auditors EA-3485

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Website: [www.sunshubhrenewables.com](http://www.sunshubhrenewables.com) Email: [ceo@sunshubhrenewables.com](mailto:ceo@sunshubhrenewables.com)

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EXECUTIVE SUMMARY.

<b>Sr No</b>	<b>Observation*</b>	<b>Problems*</b>	<b>Resulting losses*</b>	<b>Remedial measures*</b>	<b>Capital*</b>	<b>Projected savings*</b>	<b>Compliance</b>
1	Rain Water Management	No serious water problem seen	Future shortage of water	Perforated Pavers and water management system.	Yes, Capital intensive	Improved quality of water and high yield. Calls for reduced pumping hours.	Under consideration, proposed under college grant.
2	Solid Waste Management	Spilling of waste	Dirty used packages in and around the college	Incorporate need for cleanliness and place waste collection bins.	Rs.4500/- per set	Reduced cleaning hours and good hygienic conditions.	Waste bins are placed along the corridor. Complied.
	Gassifier system	Vegetable waste	Valuable fuel required for cooking	Bio digester for gasification.	30,000/-	Equivalent to couple of LPG cylinders.	Proposed to be taken up under capital grants.
	Gassifier system	Toilet waste	Valuable gaseous fuel	Bio digester for gasification.	30,000/-	Elimination of foul smell near the hostels.	Proposed to be taken up under capital grants.

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SO LET US ALL USE BOTH SIDES OF THE SHEET even better adopt E-CORRESPONDENCE.

<b>Sr No</b>	<b>Observation*</b>	<b>Problems*</b>	<b>Resulting losses*</b>	<b>Remedial measures*</b>	<b>Capital*</b>	<b>Projected savings*</b>	<b>Compliance</b>
3	Health Hazard	Sanitary pads disposal provision.	Open area disposal	Incinerator placed at convenient point.	Rs. 10000/- to 15000/-	Clean and safe health.	Installed and working. Complied.
4	Electrical	Old tube lights	High energy consumers	T5/LED or induction* lights of appropriate ratings.	Rs.680/-per unit	Rs.300/- per tube per annum. ROI of 2 years.	LED lights are put to use. Being done in phases.
5	Natural Lighting	Un cleaned windows and ventilators, Forced switching on of tube lights	High energy bills	Clean the window panes and allow maximum natural light penetration.	Nil, In house manpower.	Substantial cost of energy bills on lighting.	All glasses have been replaced.
6	Natural Ventilation	Permanently closed ventilators.	Creation of hot air pockets below the ceiling.	Open the Ventilators for easy exit of hot/warm air from the rooms.	Nil, In house manpower.	Eliminates use of Electrical Fans and Substantial cost of energy bills	Ventilators are now open but need to be executed in all the class rooms for free air circulation.
<b>* For details please follow the discussions in the report.</b>							

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**We suggest the GREEN POLICY be declared prominently at major locations for the information of all the stake holder of the organization. We have suggested a draft for your consideration. You may edit the same in line with your policy and put up for display.**

GREEN POLICY:

We the Principal, staff and the students of **SCP ARTS AND DDS COMMERCE COLLEGE @ MAHALINGPUR**, adopt responsible practices with due regard to the environmental impacts of our daily activities. We set and continually review objectives and targets for achieving our goal to protect our entire college premises from all pollutions.

We aim to manage environmental risk and strike an optimal balance between the behavioral cultures and compile educational curriculum with the sole goal of contributing to self sustainable society.

We seek not only to comply with safety and environmental regulation but also to implement in house standards to improve our environmental performance and contaminate the environment.

We commit ourselves to the safe operation of all our working habits, be it in class rooms, library, canteen, on road, off road, or at our place of residence.

We seek to reduce environmental load by efficiently using resources, saving energy, reducing waste, encouraging material recycling, with special emphasizes to minimizing emissions of green house gases, ozone deflating subsidence and toxic matter.

We endure to minimize environmental loads and adopt environmental friendly technologies when ordering and purchasing necessary products and Resources.

We endure to attend to educational programs and propagate our close friends and colleagues to follow suit.

We endure to ensure that we recognize the essence of this Green policy by actively advocating in favor of environmental concepts.

We make wide ranging social contribution in association with the students, teaching staff, administrative staff, housekeeping staff by disclosing information and supporting environment conservation initiatives.

Chairman/Secretary.

Principal

**SUNSHUBH RENEWABLES & RESEARCH CENTRE**

<b>WATER</b>	<b>ENERGY</b>	<b>POLLUTION</b>	<b>ORGANIC</b>
HARVESTING	EFFICIENCY	MINIMIZE	FARMING
CONSERVATION	CONSERVATION	ELIMINATE	WORMICOMPOST
MANAGEMENT	GENERATION	MANAGE	BENEFITS

Certified Energy Auditors. Govt. Of India (EA 3485), ISO 50001:2011 & ISO 14001:2015 Lead Auditors.

**GREEN AUDIT COMPLETION CERTIFICATE**

I, Mallikarjun A Kambalyal, endorse and confirm that the Green Audit has been carried out on 17<sup>th</sup> Dec 2018 under the instructions of Principal, Dr B M Patil, KLE Society's SCP Arts & DDS Commerce College, Mahalingpur, Karnataka.

**Date: 17<sup>th</sup> Dec 2018**

**For SUNSHUBH RENEWABLES & RESEARCH CENTRE.**



**Manager/Proprietor.**



#120-122,131-2, 'A' Block, IT Park, Opp. Glass House, HUBLI-580 029. Karnataka, INDIA  
 Germany Off: Neuer Weg 166, 47803 Krefeld, Deutschland, GERMANY. Anbieter-Nr 1041388  
 www.sunshubhrenewables.com, Email: ceo@sunshubhrenewables.com, Ph: 0836-2350505, 9449033505  
 GST: 29A0MPK2293K2ZB PAN NO: A0MPK2293K IEC: 0711010412

document1

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## 1. ACKNOWLEDGEMENT:

SUNSHUBH RENEWABLES & RESEARCH CENTRE is pleased to express its sincere gratitude to the management of SCP ARTS AND DD SHIROL COMMERCE COLLEGE @ MAHALINGPUR., for entrusting SUNSHUBH RENEWABLES & RESEARCH CENTRE with the assignment on Green Earth practices based on Educate, Practice, Advocate & Manage the resources in their educational organization.

We also wish to thank the officials and the maintenance staff for the help rendered during the energy flow study. We would fail if we neglect to appreciate the sincere efforts put in by the Faculty

- Dr. B. M. Patil (Principal),
- Dr. Sunanda Soraganvi
- Prof. N. M. Nimbaragi (Co-Ordinator, NAAC)
- Prof. V. M. Mujawar

and the Students who against all odds have kept the college premises clean to the possible limits. Without the crucial and significant support from the fellow teaching team the energy savings and carbon footprint reduction would not be a reality.

With the motivational support of the management, ground realistic support from teaching team and sincere efforts of the students in incorporating the change (habits) and instructions, the college could effectively declare the reduction in Carbon footprint and optimize the waste reductions.

We are not in a position to compute the carbon foot print at this point of time as the basic information from each of the students is yet to be collected; however, we will discuss the Carbon Foot print in the follow up compliance report.

Wishing the team a great success we deeply express our gratitude and heartfelt “THANKYOU” for allowing us to assess the energy flow scenario there by the GREEN STATUS.

Mallikarjun A. Kambalyal. B.E.(E&C).  
Certified Energy Auditors (EA-3485)

**SUNSHUBH RENEWABLES & RESEARCH CENTRE**

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**2. LIMITATIONS:**

Our recommendations are in the interest of conservation of Electrical Energy and Green Culture i.e. the reduction in CARBON FOOTPRINT. The compliance to the recommendations will be subjected to meeting the safety and Environmental rules and guidelines.

**3. AUTHENTICATION & DATE OF GREEN AUDIT:**

This Green Audit has been carried out on 17/12/2018 under the instructions of Dr. B. M. Patil (Principal) and in the presence of Dr. Sunanda Soraganvi, Prof. N. M. Nimbaragi and Prof. V. M. Mujawar.

**4. ABOUT GREEN AUDIT:**

SCP ARTS AND DDS COMMERCE COLLEGE, MAHALINGPUR has asked SUNSHUBH RENEWABLES & RESEARCH CENTRE, Hubli., to conduct the Green Energy Audit for their Institution.

In this context, the management of the Institute represented by Dr. B. M. Patil (Principal) interacted with us for the feasibility to reduce energy consumption and adopt green habits.

SUNSHUBH RENEWABLES & RESEARCH CENTRE represented by Mr. Mallikarjun A. Kambalyal made a detailed study and readings of various appliances were taken in presence of the officials and carried out the GREEN audit along with the safety parameters.

Based on the information available and the requirements put before us, it was decided to submit the report in two parts,

1. GREEN AUDIT where in pollution Preventive measures are necessary
2. ELECTRICAL ENERGY EFFICIENCY – CONSERVATION within the college &

We hope the points presented will be self explanatory, if there is need for any clarification we are open for discussions.

**SUNSHUBH RENEWABLES & RESEARCH CENTRE**

**5. LIST OF INSTRUMENTS:**

During the process of the Audit, the following lists of instruments were used.

Sr No.	INSTRUMENT	MAKE	APPLICATION
1	Digital Power Analyser (PC Interfaced)	SCHIVAN ARNOX	Electrical Machinery.
2	Accessories -3000 Amps	ARNOX	Higher load UPTO 3000 Amps,
3	Accessories -200 Amps	ARNOX	UPTO 200 Amps,
4	Thermal Imager	FLIR	Identify loose contacts and bearing losses
5	Power Analyser (Manual)	MECO	Electrical Machinery.
6	Infrared Thermometer	METRAVI	Thermal (Fuel) Energy.
7	Digital (Contact) Temperature & Humidity Meter.	METRAVI	Electrical Machinery. (A/C's And Cooling Towers)
8	Digital Tachometer	METRAVI	Electrical Machinery.(A/C's And Cooling Towers)
9	Lux Meter	METRAVI	General & Task Lighting.
10	Sound Level Meter	METRAVI	Electrical Machinery. Generator Sound Proofing
11	Digital Anemometer	METRAVI	Electrical Machinery.(A/C's And Cooling Towers)
12	Digital KW Meter	METRAVI	Electrical Machinery.
13	Digital Power Factor Meter	METRAVI	Electrical Machinery.
14	Lap Top Computer	HP	To Interface The Instruments For More Accurate -Sophisticated Readings In Sensitive Equipments.
15	Ultrasonic flow meter		Measure liquid flow.
16	Portable Vibration Meter.	METRAVI	Effect Of Filtration - Sewing System. Structural Stability
17	Live cable detector probe	-	Detect hidden cables for safety audit.
18	Power Analyser – EMM 5	Beluk	For remote communication and detailed audit.
19	Power Analyser – ELITE PRO	Beluk	Power Analyser.
20	ETV meter, KWh & PF meters for site recording.	Secure	
21	PT's for Transformer audits.	KALPA	On field auditing of transformer loading and imbalance evaluation.

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**6. ONGOING STATUS:**

It's an optimistic & highly dedicated team effort lead by the Principal & the senior staff who have dedicated all their wits & free time to initiate Green Carpet the entire college premises. It is also a fact that there do exist few short comings which however is unintentional & on being trained & educated the campus should look for continued minimized waste generation. With all due appreciation to the management , staff involved & co operation by the students, we have made few suggestions which on implementation, will reduce, demand for water & electrical power. It will also reduce the existing level of pollution to bear minimum.

GREEN AUDIT REPORT

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## DISCUSSIONS ON EXECUTIVE SUMMARY:

### 1. RAIN WATER MANAGEMENT

#### **OBSERVATION:**

The garden water outlets are leaking. It is important that the plants are watered to the specified requirements. Excess water will hinder the growth or will kill the plantations. In addition it creates room for breeding of mosquitoes. It also wastes water and energy that has been used to pump the water.

#### **Observation:**

Replaced all such loose valves and taps for proper operations.



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**GARDEN:****OBSERVATION:**

The college has initiated the creative approach by using the using the open space for garden. This is highly appreciated. However, there is no provision for dumping of waste. It is observed that the waste has been disposed off at random. Green Carpet is also found to be destroyed due to human interference. As a result the garden has lost its beauty,

**SOLUTION:**

Barricade may be placed along the corridor, prevent human interference into the garden area. This could be done by placing more pots along the corridor.

**BEFORE****AFTER****THOUGHT FOR EVERY MOMENT**

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**ORNAMENTAL & MEDICINAL GARDEN:****OBSERVATION:**

The Biology department has developed a new ornamental/medicinal garden. We appreciate the initiative and expect better development.

**SOLUTION:**

The saplings need to be watered, by sprinkler, so that the ambience in the notified area is maintained conducive for healthy and steady growth.

**BEFORE****THOUGHT FOR EVERY MOMENT**

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**BEFORE**



**AFTER( ie at PRESENT)**

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**THOUGHT FOR EVERY MOMENT**

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## 2. SOLID WASTE MANAGEMENT

### OBSERVATIONS:

It is highly appreciated & worth noticing the level of awareness of spillage. It was noticed that the college campus was maintained very clean & spitting Gutka was rarely observed. To keep the good behavior going, it is important that we facilitate for waste disposal.

### SOLUTION:

We being in a tropical dry zone, it is difficult to minimize the solid waste from flying away. Any remedial measures need to be well design to address the adverse situations. It is also important to consider human behavior.

Considering the above, it is advised to place waste segregation bins. The set of Green & yellow waste bins should be placed @ place of easy access so that the waste particles are dumped in appropriate place. It is also important to mark the bins i .e. Green Bin for organic & wet paper, Yellow Bin for plastic & dry paper To start with. If the management can refer to it is advised to go for 4 bin system. . Ease of approach should make the clean & green practices self sustainable.



### ON SITE VISUAL

#### THOUGHT FOR EVERY MOMENT

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### 3. HEALTH HAZARD:

#### OBSERVATION:

It is learnt that the ladies room and the girl's room have not been provided with the Sanitary Pad incinerator.

#### SOLUTION:

In absence of the same, the pads could be either left unattended or are disposed off in open area; this causes unhealthy leaving conditions and at times an embarrassment too. Hence it is necessary that the issue is addressed with top priority.

**COMPLIED.** Pls see the visual as on site.



**ON SITE VISUAL**

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#### 4. ELECTRICAL

##### **OBSERVATION:**

It is observed that the Batteries are stored in one remote corner, without proper cross ventilation.



##### **SOLUTION:**

It is required that the batteries are placed in well ventilated areas, away from human contact.



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Separate Battery house has been made with sufficient ventilation.

GREEN AC

THOUGHT FOR EVERY MOMENT

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## 5. NATURAL LIGHTING

### OBSERVATION:

It is important to understand the significance of the Energy use implication. The use of electrical power has been observed to be unnecessary. The administration should initiate to keep all unwanted and unused appliances switched off.



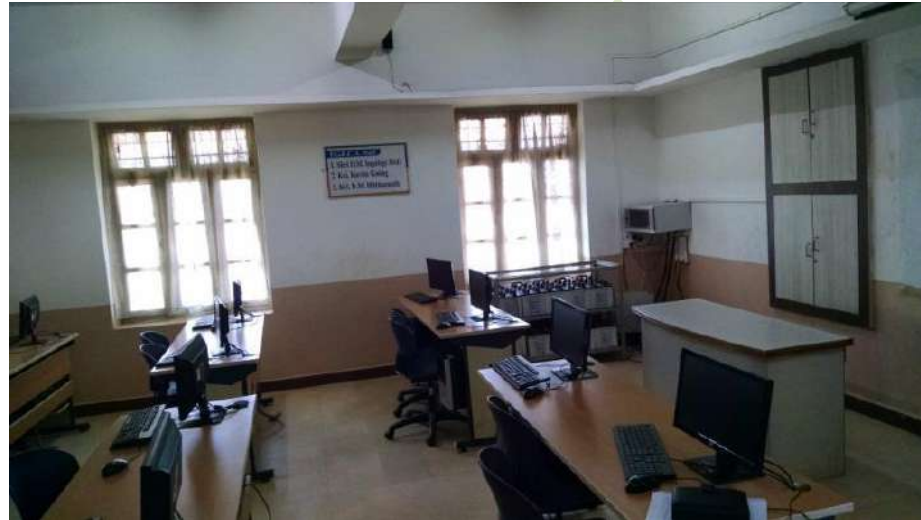
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**BEFORE**



**AFTER**



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**SOLUTION:**

Lighting improvements should be carried out by using T5/LED or the Induction Light systems in lieu of normal tube lights

It is therefore required to install Occupancy Sensors in all the rooms starting from least occupied rooms to busy class rooms

Induction Lamp



GREEN AUDIT

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**SOLAR PANELS:****OBSERVATION:**

The Solar Panels are installed prominently and serve the objective of installing the same.

However It is observed that the place of installation is prone to generate mo dust.

**SOLUTION:**

Hence it becomes now necessary to keep the solar panels free from dust settling.

Non compliance would lead to low charging of battery and speedy discharge. It may also call for battery life reduction.

**BEFORE****AFTER****THOUGHT FOR EVERY MOMENT**

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## 6. NATURAL VENTILATION

### OBSERVATION:

The class rooms covered with sheets do not have cross ventilation.

The room temperature is known to rise very fast.

This fact results into non favorable sitting conditions and the students may not be able to focus on the class.



### SOLUTION:

Place ventilators just below the sheets on all possible sides for the hot air to exit.

Place wall mounted fans in place of Ceiling fans.

Keep the windows open all the time for cool air to flow in.



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**WOMEN'S ROOM:****OBSERVATION:**

The women's room has ventilation, but is closed permanently. It is necessary to open the glass and provide air vents.. The room temperature is known to rise very fast.

This fact results into non favorable sitting conditions

**SOLUTION:**

Place ventilators just below the slab open to air flow.

Provide lowers for the ventilators.

Place wall mounted fans in place of Ceiling fans.

Keep the windows open all the time for cool air to flow in.

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### CLEANING OF WINDOWS:

#### **OBSERVATION:**

It is found that the windows have not been maintained clean which calls for switching on internal lights.

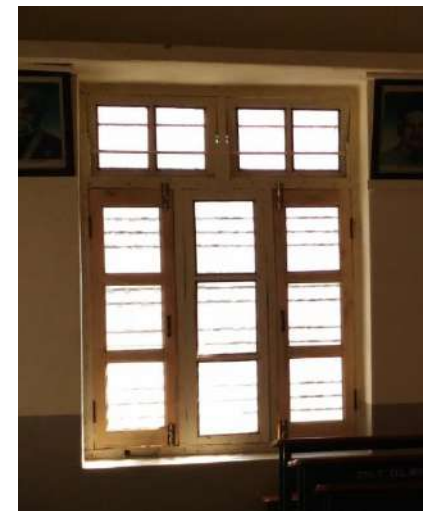
#### **SOLUTION:**

If the windows are clean at regular intervals it will help in increasing the illumination level in the room.

Thus preventing switching on lights during day light.



**BEFORE**



**AFTER**

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## 7. NATURAL VENTILATION

### OBSERVATION:

It has been observed that the ventilators remain closed all the time. Thus, the fans are being used. The college premises is well engineered to allow the natural breeze to flow through & maintained comfortable weather conditions.



**BEFORE**



**AFTER**

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**The college administration,** has rightly initiated many Green Habits.

1. Installation of Solar Powered Lighting System.
2. Use of Energy Efficiency lighting systems
3. Labeling of plants, to inculcate the habit to use technical names, thus promote natural earning system.

**ACTION PLAN SUMMARY:**

- Earmark the action plan.
- Prioritize the initiatives and execute.
- Observe the benefits and shortcomings.
- Workout further improvement by involving the staff and students.

**MODE OF ACTION:**

- The process of GREEN AUDIT & ENERGY CONSERVATION should be carried out in three steps.
- Good housekeeping practices using available manpower.
- Minor alterations using in house work culture with minimum investments on accessories as discussed.
- Capital investments, which may be required for installation of new Energy Efficient Equipments.

For SUNSHUBH RENEWABLES & RESEARCH CENTRE

-Signed-

Mallikarjun A. Kambalyal. B.E. (E&C)  
Certified Energy Auditors EA-3485

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