



JSPM's Jayawantrao Sawant College Of Engineering, Pune





“Lead The Scene And Keep It Green.”



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Chapter 1. Preamble

A Green Campus is a place where environmental friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. The green campus concept offers an institution the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind.

Greening the campus is all about sweeping away wasteful inefficiencies and using conventional sources of energies for its daily power needs, correct disposal handling, purchase of environment friendly supplies and effective recycling program. Institute has to work out the time bound strategies to implement green campus initiatives. These strategies need to be incorporated into the institutional planning and budgeting processes with the aim of developing a clean and green campus.



Major Green campus Initiatives in JSPM's JSCOPE:

- ✓ Lush Green Institute garden
- ✓ Rain water Harvesting
- ✓ Solar Energy
- ✓ Waste/E-Waste Management
- ✓ Restricted Entry of Automobiles
- ✓ Battery Powered Vehicles
- ✓ Pedestrian Friendly Pathways
- ✓ Lush Green Campus
- ✓ Use of LED



Chapter 2. Objectives Behind Promoting Green Campus:



To protect and conserve ecological systems and resources within the campus.



To ensure judicious use of environmental resources



To meet the needs and aspirations of the present and future generations.



To integrate environmental concerns into policies, plans and programmes for social development and outreach activities.



Chapter 3. Benefits Of The Green Campus:

Benefits to the Environment

- Environmental impacts of the Campus are quantified so targets and performance indicators can be set.
- Improves overall environmental performance.
- Improves waste management.
- Optimal utilization of resources.
- Improves management of environmental aspects.

Benefits to the Institute

- Forum for university management, academic staff and students to meet.
- Creates a more balanced campus community.
- Empowers students and staff.
- Encourages innovation and change.
- Prevents and reduces environmental impacts.
- Reduces associated costs.
- Good publicity.



Benefits to Students and Learning

- Improves learning outcomes & Research skills (developing an action plan, investigation, setting targets, monitoring progress and reporting progress).
- Transferable skills to workplace: communication facilitation, teamwork, committee servicing.
- Introduction to new topics.

Benefits to Local and Wider Community

- Sets an example in the locality.
- Involves local groups and representatives.
- Shares experience and best practices.
- Reduces waste generated, travel impacts etc. in community.
- Institute becomes a better neighbor.



Chapter 4. Green Campus Policy:

A Green Campus is a place where environmental-friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. The green campus concept offers an institution the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind.

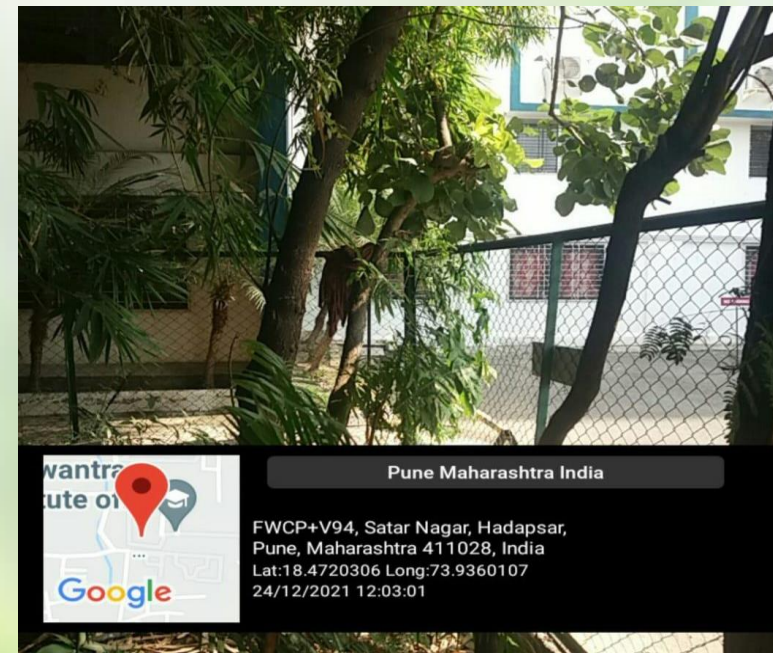
In JSCOE, we practice and maintain the following criteria and policies to make it a pollution free, energy saving green campus:

4.1. Lush Green Institute garden:

Green Landscaping with Trees and Plants – the campus is beautifully landscaped. An active ECO club ensures the organization of tree plantation on World Environment Day, and various



awareness programs & events every year. A rich variety of flora and fauna predominates the natural landscape of the campus. Exotic fruit trees are also planted in the campus.



Lush Green Institute garden



4.2. Rain Water Harvesting:

Water scarcity is serious problem throughout the world for both urban & rural community. Urbanization, industrial development & increase in agricultural field & production has resulted in overexploitation of groundwater & surface water resources and resultant deterioration in water quality.

In JSCOE campus a rain water harvesting system is made, following are the details:

- Date of commissioning: 10.09.2017
- Terrace area : 8000 sq. feet
- Pipes installed : 6 no.
- Type : underground recharge
- Water collected :3,33085 litters



Date of Installation: 23.06.2017

Rain Water Harvesting



4.3. Solar Energy:

In JSCOE Campus, solar energy is used. By Using, solar energy it is possible to reduce energy use and the associated costs. Such a system does not depend on fossil fuels and takes energy from the sun. It therefore, saves money, which is a major advantage of solar heating systems. Also, it does not pollute the environment.

Solar Panel of Electrical Department:

- INSTALLED CAPACITY : 3 KW
- DATE OF INSTALLATION : 23.06.2017
- DAILY AVERAGE UNITS : 12 KWH
- UNITS GENERATED : 7491 KWH
(TILL DATE)

SAVINGS IN ENERGY BILL :Rs. 74910/-

INSTALLED BY: SUNRISERS ENERGY SOLUTIONS





Solar Panel of Mechanical Department:

- INSTALLED CAPACITY : 3KW Capacity System
- DATE OF INSTALLATION : 23.06.2017
- DAILY AVERAGE UNITS : 12kwh
- UNITS GENERATION
CAPACITY : 16KWh

SAVINGS IN ENERGY BILL : Rs. 12700 (Annual Saving)

INSTALLED BY:





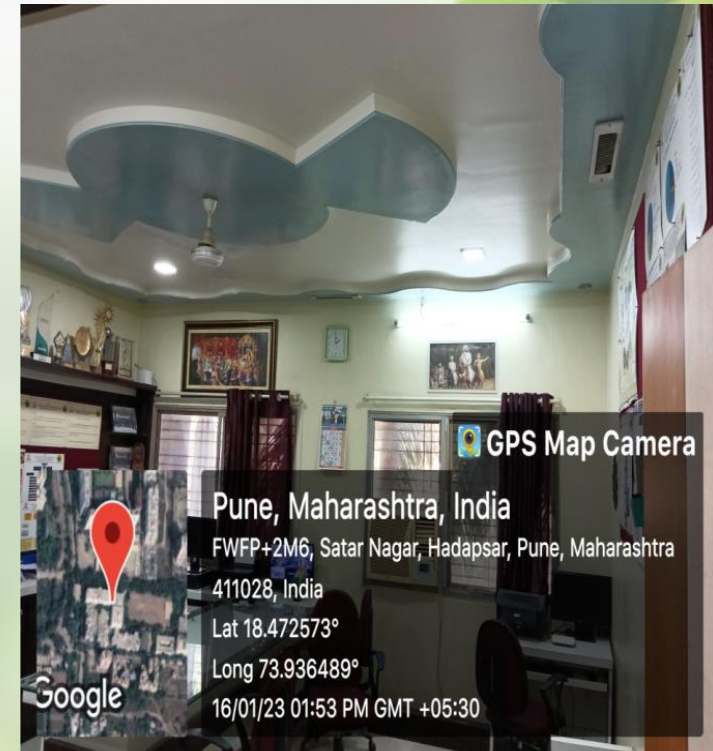
Solar to battery connection for electric supply



Electric supply through solar energy



Use of Electricity in Conference hall C 307



Use of Electricity in HOD Cabin C101



4.4. Waste/E-Waste Management:

The dustbins are kept at various places to keep the campus free from garbage and plastic.

The garbage/waste are thrown into bins, and then it is dumped into dumping yard, and from there it is collected by the vehicles of municipal coorpaoration.





Waste Management



Solar Based Intelligent Garbage Collector for fertilizer generation and garbage collection.

In this project, Government officials will be alerted about the garbage management situation in their respective areas. For rural as well as urban regions, this equipment could be used. It will be used for effective waste management in neglected areas. Garbage which is not collected should be processed to form fertilizers in minimum time. The amount of fertilizers created should be uploaded to the official sites or app. The fertilizers produced can be distributed to the farmers. The gas collected from the garbage and fertilizers should be converted to electricity and store in the battery provided. The system can be installed near Industrial, hospitals, colleges, restaurants areas for effective management of its waste. The electricity generated can be used for the system itself making it self-sustainable and the excess electricity generated can be provided to the nearby street lamps.



Prototype of Smart Garbage Bin using IOT

Proposed System for College Campus:-

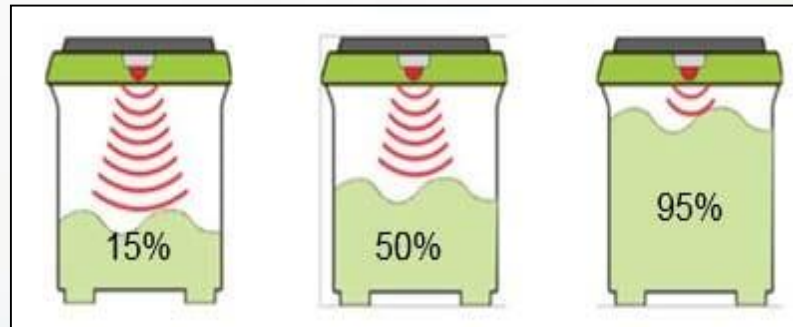
- Sensor detects level of the bin. It gives the yield of what level of trash is filled.



Graphical representation of Sensor Detecting Garbage.

- The map showing the guide of the region where bin is located is associated with Internet and the LEDs are put close the bins.
- The IR sensors are placed 30, 60, 90 % level.
- When the garbage reaches the 30 % it sensor senses and sends the status on the app.
- Similarly, the 60- and 90 % sensors function.
- Weather Monitoring System

- Automatic water sprinklers for decomposition process of garbage.



Graphical representation of Level Detection using Sensors

- When the bin becomes full the Ultrasonic sensors sends an alert to the app and notifies the garbage collector to collect the garbage.



Graphical representation of Ultrasonic sensor for the level detection and weight sensor for weight detection of garbage.

- If the garbage collector fails, garbage falls beneath resulting the activation of Bioculum mechanism that converts the garbage to fertilizer.
- The fertilizer is collected and dispersed to farmers

Patent No. & Award Photos Of Smart Garbage Bin

(12) PATENT APPLICATION PUBLICATION (21) Application No.201721011276 A
 (19) INDIA
 (22) Date of filing of Application :29/03/2017 (43) Publication Date : 08/09/2017

(54) Title of the invention : INTELLIGENT GARBAGE BIN FOR IOT.

(51) International classification	:H04W 4/00 H04W 72/04	(71)Name of Applicant : 1)Vivek S. Deshpande Address of Applicant :D-19, Prathmesh, Chintamani Nagar, Bibwewadi, Pune 411037 Maharashtra India
(31) Priority Document No	:NA	2)Dattatray S. Waghole
(32) Priority Date	:NA	(72)Name of Inventor :
(33) Name of priority country	:NA	1)Vivek S. Deshpande
(86) International Application No	:NA	2)Dattatray S. Waghole
Filing Date	:NA	3)Sandip Machhindra Karande
(87) International Publication No	: NA	4)Prasanna Kadam
(61) Patent of Addition to Application Number	:NA	5)Nikhilesh Satnurkar
Filing Date	:NA	6)Sumit Sunil Shitole
(62) Divisional to Application Number	:NA	7)Abhijith Nair
Filing Date	:NA	8)Priyanka Bhosale

(57) Abstract :
 Garbage waste management is a word biggest issue in urban and city area. A dust bin overflow problem occurs in India as well as also in other different countries. Time to time garbage collection from dust bin process is never done by workers. So due to the decomposed garbage create health related serious issues. So to solve these issues we have design one novel smart bin for garbage collection with alert system. Proposed invention designed with IoT as well as sensor technology. Smart bin system mainly make use IoT (Internet of Things) and Sensor Network, our system mainly focuses on the use of sensors like Infrared ,Gas and weight for the data sensing which acts as the main trigger in the system thereby enabling the alert mechanisms. IoT mainly focuses on the sharing of the data through internet so that continues status of the bin is always available to authorized person. We can also analyze the data received in term of the efficiency of the system by considering the previous and the past system. In current scenario we have noticed that our waste collection system is not efficiently managed regarding the time to time waste collection. We have noticed that our current waste collection system is not fully operational regarding the emptying of the bin in a time to time basis, which therefore degrades the environment quality factor in terms of the health issue of the habitants at that particular location. Due to this overflowing of the bin occurs which laid to the spreading of various diseases like malaria, dengue. Also the stray dogs feed on these waste hence rabies spreads. As we are focusing on the clean India Mission hence proper awareness should be done among the people so that we can make our Country Clean.

No. of Pages : 16 No. of Claims : 5





E-Waste Collection Drive

JSPM's JSCOE has organized event on "E-Waste Collection Drive " along with Institution Innovation Council, JSCOE and The International Association Of Lions Clubs, District Code 3234D2 , 11.2.2023 to 13.2.2023 in offline mode.



E-Waste Collection Drive



4.5. Restricted Entry of Automobiles:

Entry of vehicles is restricted. At the main gate of college, visitors' entry register is maintained that records the vehicle license number of all visitors. In its endeavor to reduce the pollution in campus, authorities at College campus.



4.6. Battery Powered Vehicles:

A battery operated vehicle service in the campus of JSCOE is adopted. With this initiative, COER adopted a green culture and also promotes a greener ecosystem along with providing a pollution-free atmosphere to the residents inside the campus.





4.7. Pedestrian Friendly Pathways:

All around the campus of JSCOE, tiles paved pedestrian friendly roads have been constructed for smooth commuting of students, faculty and other staff members of the institute. These roads are maintained on regular basis for keeping them free of mud & dust. On either side of the roads, proper concrete boundaries are made and painted. These well-maintained roads add the beauty of the JSCOE campus.





4.8. Use Of LED:

As a step towards energy saving, lightings of class rooms, and labs are replaced with LED panels.

The outcomes of LED lights are as given below:-

- ✓ Long life. The components of an LED and the way that they generate light significantly extend the lifespan of these bulbs.
- ✓ Energy efficiency.
- ✓ High brightness and intensity.
- ✓ Exceptional color range.
- ✓ Low radiated heat.
- ✓ Reliability.
- ✓ Instantaneous illumination.
- ✓ Directional lighting.



Use of LED



4.9. Lush Green Campus:

The college campus is lush green & huge occupied by highly experienced faculty and friendly staff. Home to some exotic varieties of flora & fauna, many former students and faculty members say, it is probably the greenest among all colleges, at least in this part of the city.





Chapter 5. Challenges



High maintenance is required in managing a green campus approach and in creating sustainability.



It requires manpower and other resources.



High cost is involved in the effort to sustain green campus activities.



Chapter 6. Outcomes



Awareness is created about the hazards that are polluting the environment.



Students and teachers realize their individual responsibility to save the environment.



The diverse green cover of JSCOE is also a home to a number of animals, birds and rare species, helps in making campus rich in biodiversity.



It envisions a green campus where environmental friendly practices and education combined to promote sustainable and ecofriendly environment in the campus and beyond the campus.



Chapter 7. Conclusion

The concept of green campus is an integration concept in the Education research and community service system in environmental management. The green campus concept is a breath of fresh air in a change towards a sustainable campus. The application of this concept can bring a positive change in both teaching and learning activities and the achievement.

