

EAI Green Colleges

**Projects & Green
Activities**

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Overview of the Report

What is this document about?

This document provides overview on the projects that have been carried out by college students in various renewable energy and clean tech sectors. It also provides green activities that have been carried out by students across the world.

The document aims to provide ideas for students who are looking at taking up similar clean tech projects as their final year academic projects.

Why have we made this document?

The objective of this document is to promote renewable energy and sustainable activities among college students who can bring changes in the society as they have enough enthusiasm to get things done.

Summary of Projects Carried out by College Students across Various Cleantech Sectors

College & Location	Sector	One line highlight of their project
Georgia Institute of Technology – United States	Solar	Risk-Conscious Design of Off-Grid Solar Energy Houses
University of Nebraska - United States	Solar	The Economic Feasibility of Solar Panels
University of Waterloo - Canada	Solar	Large-Scale Solar PV Investment Planning Studies
University of California – United States	Solar	Design considerations for solar energy harvesting wireless embedded systems
Unknown	Solar	Parabolic Trough Collectors in Power Production
Arizona State University	Solar	Engineering Students Tackle Solar-Powered Flight Challenges
Unknown	Solar	Sun-Tracking Solar Cell Array System
University of Michigan	Solar	The Solar UAV Project
Shanghai Jiao Tong University	Solar	Adsorption Refrigeration— an Efficient Way to Make Good Use Of Waste Heat and Solar Energy
Lincoln University – New Zealand	Wind	Small and Micro Wind Turbines for Residential Use
University of Pittsburgh / Duquesne University	Wind	Student Wind Turbine Project Wins Innovation Contest
SVSVMV University, Tamil Nadu - India	Wind	Reactive Power Management for Wind Electric Generator
Pennsylvania State University - United States	Hybrid Wind & Solar	Solar and Wind Hybrid Charging Station for Electric Vehicles

Summary of Green Activities Undertaken by College Students

College & Location	Sector	One line highlight of their project
University of California- Berkeley - United States	Vocational activities	Green initiative fund collection by students of UCB
Utah State University – United States	Bio fuel projects	Utah University Students Run a Car Fuelled by Waste from Cheese Industry
University of Illinois – United States	Sustainable campus	University of Illinois Run a Student Sustainable Committee
University of California – United States	Clean technology	Improving your Carbon foot print through a Media Arts Students of University of California
Strathmore University - Kenya	Green earth	Strathmore University Clean up their Neighborhood
Delhi Technological University - India	Clean technology	Washing Machine Requiring No Electricity – from Delhi Technology University
Malaviya National Institute of Tech - India	Sustainability	Jaipur College Students Propose to Develop an Energy Resource Planning for a Village for their Power Needs.
Bharati College, University of Delhi - India	Sustainable awareness	Eco Club Initiatives of a Delhi-based College
K C Bansal Academy –India	Biogas project	Biogas Plant in the Campus of Bansal Academy, India
D Y Patil College of Engineering – India	Clean energy	Solar Bottle Light for the Rural Households
Indian Institute of Technology, Mumbai – India	Sustainable campus	Proposal to Build Green Buildings in IIT Campus
Tarumitra Bio-reserve - India	Biodiversity	Eco Camp for Biodiversity Conservation – Tarumitra Bio-reserve
Vidyavardhaka Engineering College - India	Innovative technology	Solar –based Agricultural Products by Engineering College Students
SSN College – India	Clean energy	SSN College Students Provide Solar Electricity to the Rural Households
University of Washington (UW) – United States	Green campus	5000 Students from University of Washington Run a Campus Sustainability Fund
Santa Rosa Junior College – United States	Sustainable lifestyle	Students of Santa Rose Junior College Follow Sustainable Lifestyle Practices.
Nanyang Technological University – Singapore	Clean energy	Energy Efficient Big Screens

Colorado State University – United States	Sustainable lifestyle	Green Warrior Campaign
Pomona College - liberal arts college in Claremont, California.	Sustainable campus	Green Bikes Shop



SOLAR PROJECTS

Risk-Conscious Design of Off-Grid Solar Energy Houses

University & Year:

Georgia Institute of Technology, December 2009

Category: SOLAR

Abstract:

The research develops a risk based holistic system design method to guarantee a match between onsite sustainable energy generation and energy demand of systems and occupants.

A power reliability assessment algorithm is developed to aggregate the system underperformance causes and estimate all possible power availability outcomes of an off-grid house design. Based on these foundations, the design problem of an off-grid house is formulated as a stochastic programming problem with probabilistic constraints.

The research provides a risk oriented view on the energy self-sufficiency of off-grid solar houses. Uncertainty analysis is used to verify the match between onsite sustainable energy supply and demand under dynamic ambient conditions in a manner that reveals the risks induced by the fact that new technologies may not perform as well as expected.

Full

Report: http://smartech.gatech.edu/xmlui/bitstream/handle/1853/31814/hu_huafen_200912_phd.pdf?sequence=1

The Economic Feasibility of Solar Panels for the University of Nebraska – Lincoln

University & Year:

University of Nebraska, November 2010

Category: SOLAR

Abstract

The cost effectiveness of photovoltaic panels for use by the University of Nebraska-Lincoln as a means of electricity generation was investigated. A simple atmospheric radiation transfer model which estimates solar radiation receipt values for optimally tilted and tracking photovoltaic panels was utilized. An angle of 36° was determined as optimal for the Lincoln area. Model values were applied to solar panel efficiencies and areas to determine actual received radiation per unit area by the panel.

Panels averaged 279 kWh per year when fixed; 336 kWh per year when fitted with tracking equipment. Finally, the estimated panel reception was multiplied by the price of electricity per kWh. Photovoltaic systems are not currently cost effective in Lincoln, NE for commercial use due to low conversion efficiencies of the panels, high installation expenses, and cheap public energy.

Full Report:

<http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1018&context=envstudtheses>

Large-Scale Solar PV Investment Planning Studies

University & Year:

University of Waterloo – 2011

Category: Solar

Abstract:

This report documents the various photovoltaic (PV) performance models and software developed and utilized by researchers at Sandia National Laboratories (SNL) in support of the Photovoltaics and Grid Integration Department. In addition to PV performance models, hybrid system and battery storage models are discussed.

A hybrid system using other distributed sources and energy storage can help reduce the variability inherent in PV generation, and due to the complexity of combining multiple generation sources and system loads, these models are invaluable for system design and optimization.

Energy storage plays an important role in reducing PV intermittency and battery storage models are used to understand the best configurations and technologies to store PV generated electricity. The paper is organized into three sections to describe the different software models as applied to photovoltaic performance, hybrid systems, and battery storage. For each model, there is a description which includes where to find the model, whether it is currently maintained and any references that may be available.

Full

Report: http://photovoltaics.sandia.gov/Pubs_2010/PV%20Website%20Publications%20Folder_09/KIise%20and%20Stein_SAND09-8258.pdf

Design considerations for solar energy harvesting wireless embedded systems

University & Year:

University of California, Spring 2007

Category: SOLAR

Abstract:

Sustainable operation of battery powered wireless embedded systems (such as sensor nodes) is a key challenge, and considerable research effort has been devoted to energy optimization of such systems. Environmental energy harvesting, in particular solar based, has emerged as a viable technique to supplement battery supplies. However, designing an efficient solar harvesting system to realize the potential benefits of energy harvesting requires an in-depth understanding of several factors. For example, solar energy supply is highly time varying and may not always be sufficient to power the embedded system.

Harvesting components, such as solar panels, and energy storage elements, such as batteries or ultracapacitors, have different voltage-current characteristics, which must be matched to each other as well as the energy requirements of the system to maximize harvesting efficiency. Further, battery non-idealities, such as self-discharge and round trip efficiency, directly affect energy usage and storage decisions. The ability of the system to modulate its power consumption by selectively deactivating its sub-components also impacts the overall power management architecture.

This paper describes key issues and tradeoffs which arise in the design of solar energy harvesting, wireless embedded systems and presents the design, implementation, and performance evaluation of Heliomote, our prototype that addresses several of these issues. Experimental results demonstrate that Heliomote, which behaves as a plug-in to the Berkeley/Crossbow motes and autonomously, manages energy harvesting and storage, enables near-perpetual, harvesting aware operation of the sensor node.

Full Report: <http://dl.acm.org/citation.cfm?id=1147764>

Parabolic Trough Collectors in Power Production

University: Unknown

Project Executers: N.Gautam

Category: Solar

Abstract:

This project "Parabolic trough collector in power production & energy conservation" deals with the production or utilization of renewable forms of energy such as solar energy through parabolic reflectors. This project highlights the harnessing of solar power and hence utilizing it for various other purposes which delivers several advantages.

Parabolic trough collectors are sun light reflecting devices which are in parabolic shape. It works on the principle that the focal point of the parabola possesses higher degree of energy. Parabolic reflectors are designed in a way that they move automatically around the pipes with according to the movement of the sun. This makes that the reflectors are always focused at the sun and hence results in higher efficiency.

This system is driven by various advantages. The operating cost of the plant can be reduced by 12%. In power production such as geothermal or solar plants this project is of much importance. With more subsidies for solar in on radar, this system could successfully cover the capital cost in about two years based on capacity of plant.

URL : <http://www.indiastudychannel.com/resources/148520-Parabolic-trough-collectors-power-production.aspx>

Engineering Students Tackle Solar-Powered Flight Challenges

University: Arizona State University

Project Executers: Mark Garrison, Cory Peterson, Michael Yach and Cameron Simoes

Category : Solar

Abstract:

The project explains about mounting more solar cells on the planes to boost power – but without burdening the aircraft with additional weight of heavy batteries that would inhibit flight performance was the main idea also by sougning ways to use excess solar-generated energy to charge the airplanes' batteries, and to equip the planes with wireless communications capabilities such as global positioning devices and video technology to enable streaming of live images during flight.

Improved remote-controlled and autonomous (self-directed) aircraft can benefit law enforcement, border patrol and emergency-response operations, as well as environmental research and land protection efforts. The technology could also be useful to industry –particularly power companies and other utility operations.

URL : <http://www.solarpowerworldonline.com/2011/07/engineering-students-tackle-solar-powered-flight-challenges/>

Sun-Tracking Solar Cell Array System

University: Unknown

Project Executers: Unknown

Category: Solar

Abstract:

Probably the biggest concern with conventional energy sources is the amount of pollutants that are released into the atmosphere. These growing concerns over the environmental changes caused by power generation with conventional energy sources has led to the need for developing an alternative energy source; one that is highly efficient and pollution free. The most common method of electrical power generation uses fossil fuels such as coal. However, the burning of fossil fuels releases CO₂ gas which has been directly associated with global warming due to the greenhouse effect. Photovoltaic represent one of the few energy generation options that do not create pollutants or hazardous wastes. Other factors that increase the appeal of solar energy as an alternative energy source are the high reliability of solar cells, the steadily improving performance and decreasing manufacturing costs of solar cells, and the fact that there is no fuel cost for the cells.

The definition of this project is the design of a Sun-Tracking Solar Cell Array System (Helio watcher).The concise definition of the system is a microprocessor-controlled array that actively tracks the sun's movement, such that maximum power is received at the array at all times. This is achieved by using light sensitive sensors to determine the position of the sun, and then using motors, controlled by a 68HC11 microprocessor, to align the array such that all incident rays strike normal to the array's surface.

URL: <http://seminarprojects.com/Thread-sun-tracking-solar-cell-array-system-report>

The Solar UAV Project

University: The University Of Michigan

Project Executors: Unknown

Category: Solar

Abstract:

The first phase of the project was to deliver a UAV outfitted with a gimbaled camera system and the avionics necessary for fully autonomous flight. The phase 2 design effort underwent many design innovations such as the carbon sock wrapped main spar, and removable low profile solar trays for solar powered flights. The three piece wing allows for easy transport and carries the main spar through the fuselage. After lab tests proved the new designs superiority, it was decided that the phase 2 airframe could be modified to meet the phase 1 goals.

Creating a controller for an airframe of this size and weight proved to be more challenging than previously expected. The autopilot has proven itself on more aerobatic planes in the past, however, its ability to react quickly was pushed the limit on Solar Sight.

URL: <http://aerospace.engin.umich.edu/StudentLife/studentprojects.html#sbubbles>

Adsorption Refrigeration— an Efficient Way to Make Good Use Of Waste Heat and Solar Energy

University: Shanghai Jiao Tong University

Project Executers: Unknown

Category: Solar

Abstract:

This paper presents the achievements gained in solid sorption refrigeration prototypes since the end of the 1970s, when interest in sorption systems was renewed. The applications included are ice making and air conditioning. The latter includes not only cooling and heating, but also dehumidification by desiccant systems. The prototypes presented were designed to use waste heat or solar energy as the main heat source. The waste heat could be from diesel engines or from power plants, in combined cooling, heating and power systems (CCHP). The current technology of adsorption solar-powered icemakers allows a daily ice production of between 4 and 7kg of solar collector, with a solar coefficient of performance (COP) between 0.10 and 0.16. The silica gel–water chillers studied can be powered by hot water warmer than 55°C. The COP is usually around 0.2–0.6, and in some commercially produced machines, it can be up to 0.7. The utilization of such chillers in CCHP systems, hospitals, buildings and grain depots are discussed. Despite their advantages, solid sorption systems still present some drawbacks such as low specific cooling power (SCP) and COP. Thus, some techniques to overcome these problems are also contemplated, together with the perspectives for their broad commercialization. Among these techniques, a special attention was devoted to innovative adsorbent materials, to advanced cycles and to heat pipes, which are suitable devices not only to improve the heat transfer but also can help to avoid corrosion in the adsorbers.

URL: <http://www.belgeler.com/blg/2feh/adsorption-refrigeration-an-efficient-way-to-make-good-use-of-waste-heat-and-solar-energy>



WIND PROJECTS

Feasibility Study of Small and Micro Wind Turbines for Residential Use in New Zealand

University & Year:

Lincoln University, December 2011

Category: WIND

Abstract:

The aim of this study was to assess the potential of domestic wind turbines in New Zealand. It established an overview of small and micro scale wind energy generation planning and implementation processes to gain insight into effectiveness, feasibility and straight forwardness of the processes involved. Hereby, economic, technical and planning aspects of domestic wind energy generation systems were analysed to investigate the benefits from small and micro scale wind energy generation.

Full Report: http://researcharchive.lincoln.ac.nz/dspace/bitstream/10182/4141/3/LEaP_rr_30.pdf

Student Wind Turbine Project Wins Innovation Contest

University: University of Pittsburgh / Duquesne University

Project Executers: Micah toll, Shaun Espenshade

Category: WIND

Abstract:

While commercial wind turbines can take years, or even decades of operation, to offset construction and equipment costs, This model was designed and built as a portable system with the idea, that overcomes its reduced electrical output with easy assembly, simplicity of design and low cost. The turbine uses plastic blades, which whirl in the wind to produce electricity with a conventional electrical generator.

Installed inside an aluminum pipe pounded into the ground, the turbine takes little time to set up, but produces one third of the electrical production of a commercial system at a fraction of the cost. The current one is 6 feet high and a more efficient model towered 12 feet high – can produce about 330 watts of electricity, or enough to light several rooms or power a battery bank from which appliances could draw power.

URL: <http://www.post-gazette.com/stories/news/environment/student-wind-turbine-project-wins-innovation-contest-343425/>

Reactive Power Management for Wind Electric Generator

University: SVSVMV University, Tamil Nadu - India

Project Executers: V. Karunakaran & R. Karthikeyan.

Category: WIND

Abstract

Energy in the Wind is converted into Rotary Mechanical Energy by the Wind turbine. Most of the Wind Electric Generators are having Induction Motor, (Asynchronous Motor) with constant speed and drawing more Reactive Power from the Grid, during starting / low wind period. This thesis emphasized the need of replacing the existing conventional Asynchronous Induction motor of Constant Speed by Wound Rotor Synchronous Induction motor of variable speed, namely, Doubly Fed Induction Generator (DFIG). The control principle is either the Direct Torque Control (DTC) method, Or, Two – axis Current Vector Control Method. The Direct Torque Control Method is more effective than the two axis current vector control method, for Reactive Power Management for Wind Electric Generator. The minimum usage of only about 30% of Power Electronics results in considerable cost savings and reduction of harmonics when compared with Fully Converter Wind Electric Generators.

URL:[http://www.ijser.org/researchpaper%5CReactive Power Management for Wind Electric Generator.pdf](http://www.ijser.org/researchpaper%5CReactive_Power_Management_for_Wind_Electric_Generator.pdf)



HYBRID WIND & SOLAR PROJECTS

Development of an Appropriate Solar and Wind Hybrid Charging Station for Electric Vehicles in Developing Countries

University & Year:

Pennsylvania State University, The School Of Engineering Design, Technology, and Professional Programs - 2008

Category: Hybrid WIND and SOLAR

Activity

A solar and wind hybrid charging station was designed to take advantage of seasonal wind and sun. According to the predicted vehicle usage data, estimations of vehicle and charger efficiencies, the charger is required to generate two kilowatt hours daily. The charge demand will be met with a wind turbine rated for 400 W, and a 260 W solar array. The charge storage is designed to allow the vehicles to be in operation during the day, and onboard vehicle batteries during the night. To increase the versatility of the charging station, the direct current is inverted to 110 V alternating current receptacles. The charging station will be constructed on the roof of the site library, built by Penn State University in Fall 2008. The solar panels will help to shade the roof of the library, cooling the structure.

Full

Report: <http://www.personal.psu.edu/ems5054/Sauder%20Solar%20Charging%20Station%20Thesis.pdf>

A horizontal graphic with a light green-to-white gradient, rounded ends, and a dark green shadow on the right side.

GREEN CAMPUS INITIATIVES

Green initiative fund collection by students of UCB

University: University of California- Berkeley

Country: USA

URL: <http://www.treehugger.com/culture/10-college-students-making-green-headlines.html>

Year: Started in 2007

About: Vacational activities

Activity:

University of California-Berkeley graduate Rachel Barge won a Brower Youth Award, though her efforts were focused closer to home: She helped to lead the successful Green Initiative Fund, in which students passed a referendum supporting a \$5-per-student tuition increase that gave the school an additional \$200,000 each year to put toward green projects.

She also founded Steam–Sustainability Team—an environmentally-focused internship program that set up recycling programs in student centers and developed a campus produce stand that sells organic goods from local farmers.

Utah University Students Run a Car Fuelled by Waste from Cheese Industry

University: Utah State University

Country: US

URL: <http://www.wired.com/autopia/2012/09/speed-record-cheese/>

Year: 2012

About: Biofuel projects

Activity:

Students at Utah State University have broken a land speed record in a car fueled by the waste that remains from cheese making. The student built car, known as the Aggie A-Salt Streamliner, was running on a student-derived biofuel made from yeast and cheese waste when it set the land speed record at 64.396 mph for a diesel-powered, one-liter, two-cylinder vehicle at the World of Speed event held at the Bonneville Salt Flats earlier this month.

The fuel was created by feeding the byproducts of cheese production to yeast, which yields a result that can be made into a biofuel that has a lower carbon footprint than conventional diesel. It's one of three biofuels created in the lab of USU professor Lance Seefeldt, though only the cheese-based fuel was used at Bonneville.

University of Illinois Run a Student Sustainable Committee

University: University of Illinois

Country: US

URL: <http://ssc.union.illinois.edu/>

Year: 2011

About: Sustainable campus

Activity:

The Student Sustainability Committee (SSC) is a student-led organization charged with the distribution of two student fees – the Sustainable Campus Environment Fee and the Clean Energy Technologies Fee. With the ultimate goal of making the University of Illinois at Urbana-Champaign a leader in campus sustainability, SSC reviews, recommends, and funds projects that increase environmental stewardship, inspire change, and impact students.

Improving your Carbon foot print through a Media Arts Students of University of California

University: University of California

Country: USA

URL: <http://www.dailybruin.com/article/2009/09/four-ucla-students-environmental-projects-chosen-e>

Year: 2009

About: Clean technology

Activity:

Tuyay, a fourth-year Design | Media Arts student, created “Bloom: The World is a Garden,” a project that utilizes responsive flowers to indicate the viewer’s carbon footprint. Tuyay said he wanted to combine the mechanical and organic in order to relate ecological information usually presented in graph form. The viewer inputs personal environment – related information into their mobile devices – addresses, whether or not they recycle, what kind of car they drive – and then walks towards the exhibition. The flowers then register the carbon footprint of each participant, which causes the flower to either shrivel or bloom.

“The project makes the carbon footprint physically visible,” said Méndez. “You can actually see (the flower) grow or shrivel if your footprint is bad.”

Because participants are also able to suspend the shriveling of their plant, update or improve their carbon footprint, and return to see the plant bloom, Méndez said the project allows participants to visualize caring for the Earth.

Strathmore University Clean up their Neighborhood

University: Strathmore University

Country: Kenya

URL: <http://www.strathmore.edu/News.php?NewsID=917>

Year: 2012

About: Green earth

Activity:

Diana Kerubo Mong'are, a first year student of Financial Economics at Strathmore University, started a project to clean up her Nakuru neighbourhood which is promising to make her a successful entrepreneur.

In February 2012, a few months after completing secondary school, Ms Mong'are launched Planet Green project. She persuaded her neighbours to start recycling their plastics and paper and she gave local carpenters incentives to stop burning sawdust. She has also helped nurture environmental clubs in two primary schools.

Washing Machine Requiring No Electricity – from Delhi Technology University

University: Delhi Technological University

Country: India

URL: http://aglasem.com/dtu/dtutimes/DTU_Times_13_Edition.pdf

Year: 2011

About: Clean technology

Activity:

Dhobi'-an innovative washing machine developed by DTU students – team of five students have developed a pedal-powered washing machine, which can run without electricity. The machine – developed by two computer science students, one student each from mechanical, civil and electrical branch of engineering at Delhi Technological University (DTU) – will be useful in rural areas as well where there is no electricity. Dhobi is a one-time investment of Rs 3,500 for a rural household and Rs 4,500 for the urban household.

Jaipur College Students Propose to Develop an Energy Resource Planning for a Village for their Power Needs.

University: Malaviya National Institute of Tech

Country: India

URL: <http://www.ewb-international.org/pdf/EWB-IndiaGreenAwardCompetition.pdf>

Year: 2012

About: Sustainability

Activity:

This student group from the : Malaviya National Institute of Tech., Jaipur proposes to develop efficient energy resource planning for a village near their location based on a comprehensive survey-audit of energy needs. Paper proposes an integrated system of power, so that the village community can meet their demands internally, and collectively. The paper explores the options of renewable energy resources in various energy combinations of solar, wind, biomass, micro-hydro, conventional energy sources etc.

Eco Club Initiatives of a Delhi-based College

University: Bharati College, University of Delhi

Country: India

URL: <http://www.bharaticollege.com/eco.aspx>

Year: 2010

About: Sustainable awareness

Activities:

Bharati College, University of Delhi has a Eco Club which is an initiative taken by teachers and students to create awareness about environment and environmental issues.

The eco club has taken following measures in to promote eco friendly activities in the college:

Installation of a bio composite plant:

The natural fertilizers produced here apart from meeting the need of the College with its large expanse of green; also sells manure to staff and students of the College at a very reasonable price.

Installation of a rain harvesting plant:

With the installation of the plant rain water can be collected and purified and used for various purposes in the College.

The Club has planted **several herbal plants** in the College garden.

The Club also periodically organizes trips, **awareness program** through posters, questionnaires and screens films on the environment.

The Club also organizes **competitions to promote environmental friendly attitude**. Some of the competitions organized by the Club are: 'Rangoli competition (made out of food material and herbal colors), 'Rakhi making competition?(in which rachis were made by using recycled products) etc.

Two films were screened: On Rag pickers and Winds of Change.

Biogas Plant in the Campus of Bansal Academy, India

University: K C Bansal Academy

Country: India

URL: <http://eweek.nenonline.org/eweekstories/biogas-plant-vegetable-waste>

Year: 2012

About: Biogas project

Activity:

The campus canteen of the K C Bansal Academy has a biogas plant built by the students and generates methane from vegetable waste. It came into operation six months back when Prof. Pramod Vyas from Chemistry department read about such biogas plants in Pune and decided to try it out with his students. He found this with just 2 kgs of waste and some water. It provides gas for two hours which can be used for cooking. It is based on a model developed by Anand Karve of Appropriate Rural Technology Institute

Solar Bottle Light for the Rural Households

University: D Y Patil College of Engineering

Country: India

Done by: Siddharth Sahare & Indrajeet Singh

URL: <http://eweek.nenonline.org/eweekstories/bottle-light>

Year: 2012

About: Clean energy

Activity:

The adaptation of the bottle light was done by Siddharth Sahare, third year civil engineering student and Indrajeet Singh, third year instrumentation. Since water has a higher refractive index than air, sunlight refracts through the water making the bottle below glow. It can be used from dawn to dusk. Students plan to take it to rural areas and urban construction areas. It is priced at Rs 75 in rural areas and Rs 100 in urban areas. It involves just a plastic bottle with water, a piece of tin sheet that is attached to the top half of the bottle and a cleaning agent to ensure the liquid remains clean. And voila, refracted sunlight makes the bottle glow.

Proposal to Build Green Buildings in IIT Campus

University: Indian Institute of Technology, Mumbai

Country: India

URL: http://www.dnaindia.com/mumbai/report_maharashtra-colleges-and-university-campuses-asked-to-go-green_1457961

Year: 2010

About: Sustainable campus

Activity:

University and colleges in the state have been asked to replicate the 'Green Campus' project started by Indian Institute of Technology (IIT), Mumbai that aims to reduce the environmental impact of large residential campuses. This project was started in IIT by post-graduate students. All the university vice chancellors and college principals were told by the state environment department that they will get financial and technical help if they build green buildings in their campuses and create facilities to conserve energy and water.

Eco Camp for Biodiversity Conservation – Tarumitra Bio-reserve

University: Tarumitra Bio-reserve

Country: India

URL: <http://www.unep.org/wed/news/ecocamp.asp>

Year: 2012

About: Biodiversity

Activity:

Students organized Eco camp for the Conservation of Biodiversity – 60 students and teachers from eleven schools congregated at the Tarumitra Bio-reserve. The students collected dry leaves from the forest as a mulch for the crops. The land which suffered heavily with pesticides for more than 50 years had its first crop with out poisons and chemical fertilizers. The students also made an early trip to River Ganges for a study tour and came back with the river water to be poured in the Organic field. They also started the construction of an Eco-toilette with help from the WASH Institute who is sponsoring most of the expenses. Both Urine and excreta will be processed as manure for the field.

Solar –based Agricultural Products by Engineering College Students

University: Vidyavardhaka Engineering College

Country: India

Done by: Abhishek M S

URL: <http://eweek.nenonline.org/eweekstories/save-and-gain-energy-e-cell-mantra-0>

Year: 2012

About: Innovative technology

Activity:

The multi-purpose seed separator made from metal, wood and nylon was initially designed to deseed paddy, but has been found more useful for millets, peas and other vegetables. Our objective is to create products that use minimal power and run on solar energy. Our lab is working to blend two kinds of energy, solar with electricity, gas or CNG to finally run a turbine,” said the inventor Abhishek M S of this college. The students of this college have also designed a solar oven.

SSN College Students Provide Solar Electricity to the Rural Households

University: SSN College

Country: India

URL: <http://eweek.nenonline.org/eweekstories/lighting-lives-still-makes-business>

Year: 2012

About: Clean energy

Activity:

SSN College, Chennai students have embarked on Light a School project which aims to provide solar electrifications in village schools not connected to the grid in Tamil Nadu. Many students in five villages in Tiruthani and Dindigul would be able learn and play through this initiative. A group of 17 students raised Rs 30,000 in money through sponsorships. They sourced solar panels and lights.

5000 Students from University of Washington Run a Campus Sustainability Fund

University: University of Washington (UW)

Country: USA

URL: http://seattletimes.com/html/localnews/2018025746_sustain20m.html

Year: 2012

About: Green campus

Activity:

Students of University of Washington University (UW) created a Campus Sustainability Fund two years ago, after more than 5,000 students signed a petition asking that a small portion of student fees be used for environmental projects. In the last year, students have used the money for a variety of projects, including increasing the size of the student-run UW Farm by an acre, boosting campus recycling efforts, and creating five fix-it-yourself bike stations around campus where cyclists can go to tighten a bolt or fix a flat. – April 2012.

Students of Santa Rosa Junior College Follow Sustainable Lifestyle Practices.

University: Santa Rosa Junior College

Country: US

URL: http://www.youtube.com/watch?v=lhmZ4yTloL8&feature=player_embedded

Year: 2010

About: Sustainable lifestyle

Activity:

Students for Sustainable Communities is a Santa Rosa Junior College club dedicated to educating and motivating the SRJC college community to adopt sustainable lifestyle practices. In this video the student club's Jessica Jones describes its new cafeteria project. This is a great model for creating action on the community college level, where turnover is very quick but it would work great on any campus. It would appear that the act of helping people properly sort their trash from recyclables creates a nice buzz and interest in the organization, resulting in rapid membership growth.

Energy Efficient Big Screens

University: Nanyang Technological University

Country: Singapore

URL: <http://www.todayonline.com/Singapore/EDC121007-0000022/Students-present-creative-ideas-on-eco-projects>

Year: 2012

About: Clean energy

Activity:

Joyce Chee from Nanyang Technological University created an energy-saving alternative to the big-screen LCD displays.

Green Warrior Campaign

University: Colorado State University

Country: United States

URL: <http://www.green.colostate.edu/greenwarrior/>

About: Sustainable lifestyle

Activity:

Funded by an Accelerating Climate Change grant from the Rocky Mountain Institute (lead by Carol Dollard), the Green Warrior campaign launched in January 2010 in conjunction with Recycle-Mania to engage students in energy conservation behaviors. Developed by students for students, the Green Warrior campaign was run online with a simple score sheet that allowed students to report green actions for prizes with the ultimate goal of becoming "Green Warrior Certified". Each action had a direct correlation to lowering energy consumption. After the conclusion of the 10 week campaign, a total of 253 students participated with 246 students reaching the first level (Green Warrior sticker), 212 students reaching the second level (Green Warrior T-shirt), 91 students reaching the third level (power strip), and 17 students achieving Green Warrior Certification. Over 100 power strips and 100 Compact Fluorescent lights bulbs (CFL) were given away in the 2012 campaign. According to the Environmental Protection

Agency a CFL bulb has 25 percent greater efficiency (that is, less energy use) than household incandescent light bulbs that have traditionally used between 40 and 100 watts of electricity.

The Green Warrior campaign also helps Colorado State University move towards its target Green House Gas (GHG) emissions goal of a 50% reduction by 2020. The campaign targets behavior choices on campus especially within Residence Life where almost the entire carbon footprint of a student living on campus is a part of CSU's. Without sustainable lifestyle choices by students, staff, and faculty these GHG target goals for the University are practically unachievable.

Green Bikes Shop

University: Pomona College - liberal arts college in Claremont, California.

Country: United States

URL: <http://www.pomona.edu/administration/sustainability/programs/soltrain.aspx>

About: Sustainable campus

Activity:

The Green Bike Program is a student-run bicycle shop that seeks to increase bicycle usage among students at the Claremont Colleges as part of Pomona's drive to become a sustainable campus.

The program has two main functions:

- A Bike Giveaway at the beginning of each semester that provides over 200 students with bikes for the entirety of the semester, free of charge (parts and service included).
- A student-run, sustainable maintenance and repair shop, servicing bicycles for all members of the 5-college community. All service is free, and both new and used parts are offered at a discounted rate.

Finally, the program hosts a variety of bike-related workshops and outreach events designed to develop an on-campus bike community that supports a sustainable and healthy lifestyle through the use of eco-friendly transportation.

The Green Bike Shop provides free bicycle servicing and maintenance to all students, faculty, and staff of the Claremont Colleges. This includes simple repairs like replacing tubes and tires, adjusting brakes, chain maintenance, wheel truing, and derailleur adjustments. More advanced repairs are handled on an individual basis. At this time, we are not able to offer major overhauls or comprehensive tune-ups. While we are happy to address individual problems, extensive maintenance of this sort is too time-consuming

for our limited schedule. When possible, the program makes use of used parts from recycled bikes to make these repairs; when this is not possible, new parts are offered at a discounted rate.

Green Bikes is also currently in the process of developing a short-term bicycle checkout program that will allow students to borrow bikes for single day use or keep them for up to a week. This service is also free; all that is needed is your name, student ID, and phone number. Unfortunately, this program will initially be open to only Pomona students.