DOWNLOAD PDF RENEWABLE ENERGY PROJECTS IDEAS FOR ENGINEERING STUDENTS

Chapter 1 : Fun and Educational Solar and Renewable Energy Projects

Renewable is not only the need of the hour, but also the talk of the town. And Engineering students are opting for the green when it comes to their B.E./theinnatdunvilla.com project. So, we thought of compiling.

And Engineering students are opting for the green when it comes to their B. So, we thought of compiling ia list of project ideas based on Renewable energy. Students belonging to third year or final year can use these projects as mini-projects as well as mega-projects. This list has been complied after referring to the project ideas that have come across the forum since last few years and searching across the web. If you have questions regarding these projects feel free to ask them in the replies below. You may also ask for abstract of a project idea that you have or want to work on. Here are the details about some - 1. If the energy of a tornado could somehow be sustained and harnessed, it could be used as an effective renewable source of energy. Something on the lines of what is being worked out in this project: Atmospheric Vortex Engine 2. Using Kites For Energy: Saul Griffith unveils the invention that his new company Makani Power has been working on: Solar Satellites have the advantage of being above the weather conditions, and would be able to harvest electricity from the sun 24 hours per day. Below is a TED presentation about the technology by one of the first companies looking at this technology, Space Energy Inc. Inflatable Solar Collectors Solar cells, mirrors, and rigging equipment are expensive and reduce the value of solar technology as a viable alternative energy solution. Reach your career goals faster! Finding your dream job just got easier. Find jobs in your city or matching your skills-set. Ankita Solar Powered Mobile Charger - With power-hungry smartphones becoming a norm, solar-cell based phone chargers are getting more popular but many are still often a little pricey. Instructables here has a step-by-step guide for you: So, find new ideas. Thermoelectric solid-state refrigerator powered by solar photovoltaic electricity - Using the Peltier effect to create a heat flux between the junction of two different types of materials. Absorption refrigerator in which the boiler heat is generated from concentrated sunlight. Stirling engine refrigerator in which the compressor is mechanically driven by a Stirling engine - When we heat gas using sun light, gas would expand and push the piston forward. We can use this method to power compressor of refrigerator. CrazyEngineers Jobs Finder Find the latest and the best jobs for engineering freshers and working professionals. Ankita An Advanced Geothermal System - This is the kind of energy that is discussed more often than implemented. And no one questions its potential. But very few know that the Web-Giant Google is also busy in privately funding its research and development. They are working on it for years now. Water is then injected into the well where it fractures the deep rocks, creating pockets from which steam is generated as additional water is pumped into the well. The steam is then extracted through pipes where it turns turbines to create electricity. The water is then recycled back into the well where it is reheated and reused. The video below provides additional details on this exciting new technology. Angenent discusses his research and how a grant from the National Science Foundation is helping him spread his research to high school students -.

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Chapter 2 : Renewable Energy Project for Kids: Power from Water | Science project | theinnatdunvilla.com

The Ultimate List: + Solar Energy Projects for Engineering Students These are the projects which work successfully based on the solar energy. Solar power projects are the most interesting projects and we are all well aware of the way that they are helpful in our real life also.

Solar system have many applications in domestic and idustrial market. Use of solar energy is increasing day by day. Conventional enegry resources are decreasing day by day. People are looking for non conventional energy resources. Solar energy system is also very important in replacement of electrical energy. Electrical engineers are working on solar system project every year. Engineering students also integrate solar system in their project. List of innovative solar system projects ideas is given below: It can measure voltage, current, temperature in surrounding of solar panels. It also measures intensity of light falling on solar panels with the help of light sensor. Light dependent resistor is used as a lights sensor to measure intensity of light. LM35 temperature sensor is used to measure temperature of solar panels. Shunt resistor is used as a current sensor to convert current into voltage form, because microcontroller cannot measure current directly. Voltage divider circuit is used to divide voltage up to reference voltage of controller. PIC16FA microcontroller is used to measure all these parameters. Solar energy measurement system using PIC16FA microcontroller Energy measurement system is used to measure energy or power of solar panels. Digital dc voltmeter and digital dc Ammeter project can help you to understanding of how to measure dc voltage and dc current. Produce of dc voltage and dc current is used to get solar panels power. LCD display is used to display voltage, current and output power. Smart solar charge controller using PIC16FA Smart solar charge controller is used to charge lead acid batteries properly. It is used to increase life time of batteries. PWM technique is used in this charge controller. This project also includes LCD to display charging and discharging current of battery. It also includes a short circuit and over current protection circuitry. Two transistors are connected back to back to form totem pole configuration. Solar based automatic control of street lights and automatic intensity control of street lights This project is used to make solar street lights independent from other energy sources. Solar panels are used to charge battery with the help of solar charge controller. PIC16FA microcontroller is used control intensity of street lights. Intensity of LED based street lights changes automatically according to intensity of light. Greater the intensity of light, lower will be intensity of LED street lights and vice versa. Vehicle detection system is also included in this project. Solar power auto irrigation system using microcontroller Solar power automatic irrigation system project is used to control water pumps in agriculture fields or farms automatically. Moisture sensors are used to measure moisture level in agriculture fields. If water level is less than required level of plants, solar power auto irrigation system turn on water pumps automatically. PIC16FA microcontroller is used to measure moisture with the help of moisture sensor. Solar panels are used to feed power to water pumps through dc batteries. Solar charge controller is used to charge batteries. PWM based charge controller is used in this project. Bu you can use anyone according to your requirement. Solar inverter using sg PWM controller Solar inverter is used to convert solar energy stored in batteries into AC power. Solar energy stored in batteries using solar charge controller. This project includes a complete guide to design inverter using pulse width modulation controller IC. Push pull dc to ac converter topology is used in this project. This inverter can be used up to W. In this project, I have also discussed, how to select solar charge controller or how to choose charge controller? Operational amplifier is used as a comparator to set voltage or charging and discharging limits of battery.

Chapter 3 : Latest Solar Projects For Engineering Students | NevonProjects

Â» Renewable Energy Projects Ideas For Engineering Students, Renewable Energy Technology Latest News Early Adopters Of Creating Solar Energy At And For Residential Homes Are Growing. Recently, My Mom Even Had Solar Panels Installed On Her Roof.

A variety of solar kits for students. And Learning about Solar Electricity! Details on the portable PV system This is a project lifted from PV section , but its also I think a good learning project for Solar Electricity, and when you are done, you have a useful product. Clearly the lead acid battery posses some safety issues, and adult supervision would be a must. Kevin built a small, portable PV system to provide some power for lights, radio, cell phone charging, The system is small, simple, inexpensive, and easy to build -- a great learning system. This is an earth-sun simulator you can build to test reflector designs or to understand sun and shade patterns on anything you can build a model of. It allows you to see the sun and shadows for any location on the earth and any season and for any time of day. By rotating the turntable you can quickly play the sun over your model for a full day and see the sun and shade patterns. You can take readings on the model with a light meter and get a quantitative idea how much for example a reflector is increasing radiation. This is the Solar Site Survey that I recommend people do before building any project that relies on solar radiation. I think it also makes a great learning project that: Just learning how to use the Sun Chart alone would make a great lesson. The "skyline" of obstacles is plotted on the sun chart to determine what times of the year and day your collector will be in sun. The whole thing could be done as a couple one hour exercises. Coming to understand how the path of the sun changes through the seasons is a useful for everything from designing solar homes to planning outdoor activities. It is something that amazingly few adults understand. This could easily feed into further sessions on passive solar home design, or solar electricity, passive cooling Understanding the Suns Path and Making a Sun Dial Sundial and Sun Path Lesson Lesson plan for making a sun dial and understanding the path across the sky knowledge lacking in most adults. Omniscience Futureneering With the possible exception of the small Sterling engines, this site has nothing to do with solar, but it has some really interesting DIY projects. It was founded on the premise that the best way to learn about anything was to design it, make it or modify it and then to use it. My new Thermal Imaging Camera Some tests and impressions of my new thermal imaging camera I included this in the Solar Projects for Kids section because there are just so many ways one of these cameras could be used in simple experiments to understand the thermal aspects of the world around us. They are not cheap, but are dropping in price -- maybe FLIR or Fluke has a program for school purchases? Thermal imaging cameras offer an unmatched capability to view the temperatures over a whole surface. They are a great tool for things like improving solar collector designs. They have been almost prohibitively expense, but over the last few years have come down a lot as some entry level lines have been introduced with lower prices that have been steadily dropping. My impressions of the FLIR so far are here The build is straight forward and not expensive. Some adult supervision is needed, but its something that kids could do a lot of the work on. Would love to hear from anyone who takes this on. The CPVC collector is easy to build and would make a good first solar project. A genuinely useful paper could be done comparing the effect of different kinds of shading on collector performance. As far as I know, this has not been done, and would be quite helpful to people locating solar collectors. Gary This is a simple way to test the effect of tree shade on collector efficiency. It uses two identical collectors each with a bottle of water inside to collect heat. You place one collector in full sun, and the other in the shade of the trees you are concerned about. The difference in water temperature rise at the end of the collection period tells you how much the shade is hurting. This same method could be used to compare glazing materials, compare different collector orientations, Its simple, practical, and accurate. Places to see Looking for more of these -- know of any? California Academy of Sciences -- SanFrancisco.

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Chapter 4 : Energy & Power Project Ideas

As a result, engineering students are showing lot of interest in doing projects on solar energy. So, here we are providing a list of solar energy projects which may be helpful for engineering students in completing their theinnatdunvilla.com successfully.

Put Your Water to Work: Using Hydropower to Lift a Load www. With the permanent marker, copy the design from the waterwheel template Figure 5 onto the circle of aluminum. Draw the lines from the edge of the circle to about 2 centimeters cm from the middle of the circle. Cut the aluminum circle along the eight solid lines. End each cut at 2 cm from the center. These are the paddles of the waterwheel. Carefully bend each paddle at its dotted line. Put the ruler at each dotted line so that you can make a straight bend. This waterwheel has eight paddles. Bend each paddle at its dotted line. Ask an adult to help you and always wear safety goggles when using power tools. If you use a hammer and nail, clip off any sharp metal edges around the hole with the scissors. Glue the nylon spacer to the middle of the waterwheel. Be careful to follow the instructions on the epoxy glue package. Ask an adult for help. The nylon spacer stiffens the waterwheel. Here is a completed waterwheel. Wait until the glue is fully dry before continuing. Consult the packaging of the epoxy for drying times. After the glue dries, use thin strips of Scotch tape to secure the nylon spacer to the waterwheel. Make sure that the hole in the center is not covered with tape. Set the waterwheel aside. Remove the handle from the bucket. Always wear safety goggles when using power tools. Make sure that the wood dowel can fit comfortably through the holes and spin freely. It should not be a tight fit. The wood dowel fits comfortably through the two drilled holes. Wind a piece of Scotch tape around the middle of the wood dowel. This is to add some thickness in order to keep the waterwheel in place. Now insert the dowel through the holes of the bucket. Move the dowel out of one of the holes and carefully slip the waterwheel onto the dowel over the piece of tape. Reinsert the dowel through the hole in the bucket. Turn the waterwheel and make sure that the wood dowel turns as well. The waterwheel must sit tightly on the dowel so that when the waterwheel turns, the dowel turns. Take the cotton string and tie one end to the metal nut. Tie the other end of the string to one end of the wood dowel, outside of the bucket. Tie the end such that when the dowel starts to turn, it immediately starts to wind up the string. You need to pay attention to how the waterwheel turns to do this; either clockwise or counterclockwise. The waterwheel should be sitting in the middle of the bucket and should be able to turn freely, without hitting the bucket. Now you are ready to start converting the kinetic energy in falling water to mechanical energy. To do these experiments you can use any source of moving water, like a sink or bathtub faucet, or an outdoor hose. Pick a water source where the water comes out in a steady stream. Do not use a water source where the water is a wide, cone shaped spray it will lead to poor results. For example, a shower head would not be a good water source. If you are using a hose with several different nozzle settings choose the setting that is least like a shower and most like a steady stream. Using the sink faucet to turn the waterwheel. Using the garden hose to turn the waterwheel. Using the measuring cup and the stopwatch, first calculate the flow rate of the water source you are using. You will do this by seeing how long it takes to fill 2 cups of water. Note this time down in your lab notebook in a data table like the one below. Divide 2 cups by the number of seconds it took to fill 2 cups. This is the flow rate and its unit of measure is cups per second. Note down the flow rate in your lab notebook. Do not turn off the water between measuring the flow rate and testing the waterwheel or else you will have to redo the flow rate calculation you might turn the faucet on harder or softer the next time, which would negatively affect your results. Make sure that the string and weight are unwound before you begin. Place the waterwheel under the flowing water. Measure the height of the flowing water with the ruler. Record this information in your lab notebook. Using the stopwatch, time how long it takes to wind the weight up. Note this time in your lab notebook. Repeat this measurement two additional times at the same water height and record the information in your lab notebook. One thing to keep in mind is to not let the bucket get too full of water or else the bucket water will get in the way of the

waterwheel. Make sure that the water hits the waterwheel in the same spot for every trial. The waterwheel should go either clockwise or counterclockwise each time. Record all information in your lab notebook. Now you do want to change the flow rate of your water source, so adjust it and repeat steps 13 and Make sure that the trials are all done at the same water height. Change the flow rate one more time and repeat steps 13 and 14 again. So you should have three trials each for three different flow rates. Does the time it takes to wind the weight change? Is there a limit to this time? Plot your data on a scatter plot. Plot the flow rate on the x-axis and the wind-up times and the average wind-up time on the y-axis. If you need help making scatter plots you can check out this website:

Chapter 5 : Renewable Green Energy Project ideas & topics-Mechanical Projects

â˜… Renewable Energy Projects Ideas For Engineering Students â˜… Free Home Energy Audits The Smart Solar Box Is Very Compact And Light In Weight. As Such, You Can Take Anywhere With You Including Camping And Fishing.

Rocky Mountain Institute 2. Some projects will be impossible for your home or situation â€" throw these out. You might want to put some projects that look like a big stretch on a separate list to be looked at later. Evaluate each project â€" estimate the cost, energy savings and greenhouse gas reduction. For each project on your list, see if you can come up with at least a rough idea of what it would cost and what kind of energy savings it would achieve. Make a master list of projects that you intend to do over time. This should leave you with a good list of projects that make sense for your situation, economics and the planet. Put them in the order you want to do them. All things being equal, you might as well do the projects that save the most first. But there are other factors to consider, such as the fact that some projects may interfere with others if done too early. Also, your budget may require putting off some of the pricey projects until later, or you might just be more interested in some projects than others. Have fun and keep track of your progress. Be proud of the results. Keep your utility bills so you can see what progress you are making. The bills will also be helpful if you sell the house to show its improved energy efficiency. Here are a few other resources to keep in mind. If you are doing the insulating and weatherizing projects yourself, then Insulate and Weatherize by Bruce Harley is well worth the price. Gary Reysa is an accomplished do-it-yourselfer who has tackled dozens of home energy projects, large and small. I went with the guys at https: Go with the guys at https: They are the best. He used commonly available, cheap HVAC filters, formed into a box-shape, at the open end in the attic, to prevent dust or insulation getting into the drier. Doing this, the air-intake gets the already warm air in the attic, instead of the indoors tempered air, or garage air. But for those living in hotter climates or seasons, this "snorkel" for bringing in already attic-hot air, seems a very good thing! When the 25" "big" cathode TV croaked, it got replaced with 13" unit, which used massively less energy Each energy-hog appliance that died, was either never replaced, or, replaced using a unit that drew lots less energy. These vent back into the house, via [2] 4" ducts. The intake has double filters: This both filters our air, and, feeds ground-tempered air into the house. This system is slated to get another outlet, when we can How much it saves is not as measurable right now, as it can be once we fully implement this sort of low-tech system. Twinwall Polycarbonate panels at windows. Our windows have a 4" deep casing. That easily fits [2] upper and [2] lower spring-rod curtain holders, between which the overlapping Twinwall panels can sit, pressed together. These allow loads of light, as well as thermal barrier, year-around. Also, because of the channels in the panels, a little bit of privacy. Planning to get [2] chest freezers, and use an external thermostat to run one as a fridge. Chest freezers, due to thicker insulation, use dramatically less energy. Can run these off solar panels, easily during days, and the insulation keeps them fine, all night, without any energy, once they reach best operating temps. Chest freezers are also far less costly than fridges. Fir-out windows, to form a 3" or better airspace, and mount a duplicate window on that firring. We can do this, because the old windows are single-paned, and the scavenged windows are duplicates. We were warned that the new dual-pane windows cannot survive high heat generated if the windows are in the sun for too long Not a drop of condensate, in 2 seasons. Also planning to make a larger bank of solar air heaters, for free solar air heat during days. The solar air heat panels only stopped working much, during about 2 weeks around Christmas and New Years. It was in a rental house, so we could only boot them in a series, through one small window. I called that a "win! Current house has a south-facing rear of house, making it easier to do, without anyone complaining. MORE low-tech geothermal, is on our wish-list, only doing it better than the current crawlspace surface tubing. Adding more insulation is also on our future to-do list. Here, that can only happen as an exoskeleton. For this old place, that means using commonly available Roxul or R That also requires good water filtration, or solar distillation, to remove the toxins that now rain down on us all. It just makes good sense! For us, the game of finding low-tech ways to reduce energy

use, is far more fun than any usual games. We want to be comfortable, too I measured the exact numbers with the computer plugged into a usage meter. SSDs are even cheaper now than they were at that time, and even though they are still noticeably more than a regular hard drive, the energy savings will cover that cost very quickly. When I need to replace my remaining hard drive, it will also be and SSD. Why choose fluorescent lights when you can use LED? Fluorescent lights are not suitable for everyone and still use more electricity than LED. The use of a small heating pad for minutes before bed time, placed just right, means I can go to sleep almost immediately. I discovered this out of desperation last winter. Our furnace went out and the repairman was not going to be able to make it out for several days. I have a large family, 6 children , so we do a lot of laundry. On average we do 2 loads per day. I had two small space heaters. I place those in what ever part of the house we were in at the moment. Then I unhooked the dryer vent and ran it into the main part of the house. I plugged the vent going outside and place a pillowcase over the dryer vent. This kept our house pretty warm while in use. The added moisture was a bonus since I am in a dry climate. If you go to Amazon and search for "heated mattress pad" several are listed. We use a Westpoint Stevens and its still going strong after several years. We have added them to all the bedrooms. The saving on the two computers AND all peripherals was done very carefully took half a day with a KillAWatt -- your results may vary and computers are getting better, but the savings is well worth while. Certainly agree that using a clothes line instead of a dryer is a big saving -- about KWH a year for a family according to a CA study. The main idea of the article was to point out how a few well chosen for your situation ideas can save a lot of energy and offer a very high return. The main thing is to have a plan to select the ideas that will work best for you: Some of these savings seem very large as well - 2 computers for example. This is incredibly wasteful. Fully shielded lights that direct light downward to where it needs to light are FAR better at lighting, while using less light to do it. The additional benefits of this are increased security due to the light being placed where it needs to be and better seeing at night due to less glare. I recently went to a home improvement store and of the hundred or so lights was appalled to find only TWO that fully shielded the light and directed it downwards. But there are sites out there which sell these lights, and they are comparable in cost to other new lights. So when putting these in, you can use a lower wattage bulb saving money over time for a similar up-front cost for the fixture. One last additional benefit: Easy project; big rewards. Now it is warming 55 degree F. The recycled heater now gets degree air blown through by a woodstove made in Virgina. Now uses wood fuel instead of kerosene to send warm water through the cold water supply pipe of my electric water heater. The stove is EPA certified and as long as there is city water pressure you can have a hot shower during a power outage using the wood heater. The gap between the top of the firebox and the water tank can be adjusted to maintain a safe water temperature without boiling so no circulator pumps are needed. I burn wood for at least six months per year. There is still enough room on top of the woodstove for a coffee pot during power outages. I bought one and very soon started to feel fatigued every morning. Turns out it had magnetized the steel bed springs. Moving a hikers compass from head of bed to foot caused the needle to gyrate.

Chapter 6 : Engineering Science Fair Projects | theinnatdunvilla.com

Non Renewable Energy, Renewable Energy Projects, Solar Energy, Solar Power, Alternative Energy, Sustainable Energy, Innovation, Fossil, Technology Find this Pin and more on Solar power education by The big solar power energy.

In these regions the position of the sun in the sky varies greatly over the day and over the year. To optimize the amount of solar energy received the solar cells should be aligned to the radiation. For further improvement the solar panel should also rotate allowing full 3-D steering of the incident rays. Some Fuel Cells can be used in a reversible manner, generating hydrogen from a source of electricity. In this project the use of a Fuel Cell as the energy storage device in a solar powered nightlight is to be investigated. Solar powered nightlights products are already available whereby solar energy is harvested during daylight hours to power an electric light during the night time or least the evening. This renewable energy research project will investigate the implications of replacing the existing energy storage device typically a Battery or Capacitor with a reversible PEM Fuel Cell. The concept of micro-grids is that the components in the micro-grid are controlled for a given purpose. This purpose is often control of voltage levels. If voltage values at some point in the micro-grid area deviate from given limits, the micro-grid central controller takes action to rectify this by either modifying the generation or the demand levels. In this renewable energy research project, a basic micro-grid central controller will be designed, which will be able to measure voltage values in specific parts of the network and regulate micro-grid components. This is done by devices called trackers. In this project, a basic solar tracking device will be developed and tested, based on the principle of differential measurements from two non-aligned solar sensors. The sensors will be mounted on either side of a concentrative reflector, which will be focused on a central solar collection point 5 Wind turbine pitch control implementation Efficient wind turbine operation depends on many factors, such as tracking the wind direction so that it is always facing the wind. Another very important factor is the angle at which the wind hits the blades, which is called the Angle of Attack AoA. In large wind turbines, the blades can rotate on their main axis, to optimise the AoA, therefore optimising the wind turbine power output. This is called pitch control. The pitch controller is sensing the wind speed and direction and is calculating the optimal pitch angle for the blade, rotating it accordingly. The aim of this project is to design and build a controller for pitching a wind turbine blade. Photovoltaic inverters have the standard features found in any inverter, but also specific features specialised to their application as photovoltaic inverters. This system enables the operator to collect data and control the devices connected to it e. The incident when a part of the distribution network is isolated, e. When islanding occurs, the interconnection regulations state that all generators which are connected to the isolated part must be disconnected. This is to prevent damage to equipment and potential danger to workers who think that the lines are de-energised. The aim of this renewable energy research project is to build a protection device e. Although super capacitors are on the rise, their storage capacity is still limited and their advantages only apply in certain environments. Depending on which type of energy needs to be stored, different solutions would be better, but in general finding sustainable methods need to get a higher focus. For example for electrical energy storage, quite often batteries are used, but these have a lifetime of about 5 years, depending on their type they have different advantages and recycling them can be an issue. This renewable energy research project considers looking at one alternative for storing energy, namely compressed gas. Compressing gases is quite straight forward, but also has a number of problems associated with it: This pressure vessel cannot only serve for storage under high pressure, but can also be used as the actual compressor. Although the proposal is there, there is still a variety of applications in how the vessel can be used i. The overall efficiency of a compressed gas storage system and so on. A test rig that compares the new method with current metal tanks can be made available, however overall testing of this new mechanism is required. This should then hopefully lead to improved proposals on how to use this system for energy storage. Now it has been used and optimised for electric vehicles. This renewable energy research project will look into the functioning of a reluctance motor

to get a full understanding of its behaviour and then design a control system so it can be used for motor and generator functionality. A prototype of the system should be build and efficiency measured and compared with other type motors.

Chapter 7 : A List of Three Fun Renewable Energy Science Fair Projects

Take a first-hand look at some of the problems and challenges scientists and engineers are tackling as they look at making and storing energy in our collection of energy science and engineering projects.

Paper clips Procedure Using your marker and ruler, measure and mark a few dots 6 cm up from the bottom of the bottle. Connect your dots and have an adult help you cut off the bottom using the craft knife. Measure an 8cm section from the cut part of the bottle. Cut out this section so that you have a cylindrical section of plastic. Cut four 2 cm-wide strips from the 8cm section with your scissors. Cut these strips in half so you are left with eight curved strips that measure 4 cm by 2 cm. Draw 8 evenly spaced lines lengthwise on the cork, and make slits along each line with your hobby knife. Making sure that the plastic pieces all curve in the same direction, slide each 4 cm by 2 cm plastic piece into its own slit. Unfold two paperclips and flex one end of each to create a small loop. Affix your supports on opposite sides of your plastic funnel using your duct tape. Cut the skewer in half and poke each half into one side of the wheel cork. Guide each end through a loop on your paper clip support. Insert one of the skewers into the other cork and tie thread tightly around it. Tie the loose end of the thread to a weight or other small household object. Place your completed water wheel under a gentle stream of water in your sink. Slowly run water over the wheel so that the plastic pieces on the cork catch the falling water and turn it into mechanical energy. Water has potential energy due to its position above the ground. The higher above the ground the water is, the more potential energy it has. Can you convert more of this potential energy into mechanical energy? Try making several water wheels and daisy-chaining them together! When water exits one water wheel, it can pass through another, and so on. Results The wheel spins and produces enough mechanical energy to elevate small items tied to the end of the thread. You just generated hydropower using the water from your faucet! Gravity pulls water down toward the earth, and the weight of the water exerts torque a rotational force on the water wheel. This torque provides enough energy to turn the skewer, allowing you to raise items attached to the other cork. Did you notice that more water pressure was needed to lift heavier objects? More energy is needed to lift heavy items than lighter ones, and by increasing the flow of water you generated more power. Hydropower is still used as a source of electricity in the United States. Using the same concepts from your experiment, water wheels capture the force of powerful rivers, converting it into electricity and sending it into the electrical grid. Hydropower is an example of renewable energy, energy that can be continually replenished. What other renewable energy projects for kids can you find? In addition, your access to Education. Warning is hereby given that not all Project Ideas are appropriate for all individuals or in all circumstances. Implementation of any Science Project Idea should be undertaken only in appropriate settings and with appropriate parental or other supervision. Reading and following the safety precautions of all materials used in a project is the sole responsibility of each individual.

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Chapter 8 : @ Renewable Energy Projects Ideas For Engineering Students :> More Information

The documentary features four passionate renewable energy entrepreneurs who are literally putting everything they have into their pre-commercial projects, which range from low-impact hydropower to concentrating solar using inflatable collectors.

These renewable energy science fair projects are the perfect place to start. You can explore the mysteries of biomass, hydroelectric power, or the energy in food by building on these project ideas. The balloon will grow as biogas is produced. You can test which types of biomass produce the most biogas by measuring out an equal amount of each of the following: The next time you help to clean out your refrigerator, you could find the perfect ingredients for your renewable energy science fair project! You can use this fact in a science project. Add some water, and then place a burning peanut underneath it. You can keep the peanut safely standing by poking one end of a needle through a cork and the other through the peanut, and then set it on fire with adult supervision. Measure the temperature increase of the water to show that the burning peanut is heating the water. For your science experiment, you may want to figure out which kind of nut will release the most energy when burned â€" a basic peanut? A cashew or other type of nut? Make your hypothesis based on what you know about how potential energy is stored in foods, and then try an experiment to test it out. You can, however, explore different aspects of hydroelectric power. For example, why are water wheels placed so far below the surface of the water? You can figure this out by doing an experiment that shows whether deep water has more power than shallow water. To do this, poke two holes into a container, one near the bottom of the container, and one near the top of the container. Tape over the two holes, and then fill the container with water. Remove one piece of tape, and measure the distance that the water travels. Then replace that piece of tape and remove the other one. Take a look at your results and think about what might have caused them and how the results can help you understand this aspect of water wheels. The science fair project ideas in this series are the perfect place to start.

Chapter 9 : Put Your Water to Work: Using Hydropower to Lift a Load

students the opportunity to work on design projects related to sustainable energy and environmental issues. With this in mind, an alternative energy project was offered in the form of a senior design project over the.