



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Jimmy Lin; Michael Lin	Project Number S0824
Project Title Enhanced Sprinkling System with Energy-Efficient Applications at Stevenson School	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals All over the world, the issues of renewable energy and efficient use of energy are being frequently discussed. Following the thought, we noticed that our school's sprinkler sometimes sprinkles onto the pathways, which should have some energy wasted. Besides, there is a shortcut in our campus without lights, which is dark at night causing tripping and danger. Linking these, our project is to combine the engineering and Physics to enhance the existed sprinkling system for energy-efficient applications, and provide an inspired outlook for this environmental issue.</p> <p>Methods/Materials We employed several components: the turbine generators are used to generate electricity from sprinkling and stored in the battery. The valve and the timer provides control over the sprinkling time. Solar panel is integrated into the system for stable operation. For evaluation, we conducted Water Pressure Tests to measure the pressure. We met with the school's maintenance to study the existed system and proposed an installation plan to the school for approval. After installation, we conducted Flow Volume test to find how much water would be consumed and conduct associated cost calculation.</p> <p>Results Presuming 100% energy conversion, the system would create electricity equivalent saving of \$4.86 in water usage per month, which totals to 75.6% saving of the original sprinkling cost. The system has been operating over three months. Many Physics theories have been testified with our results. This project has successfully demonstrated how we can employ the energy originally insignificant or ignored in the environment, but create an efficient application with some benefits. We received a gratitude certificate from School recognizing our contribution to campus safety and demonstration of energy-efficient concept.</p> <p>Conclusions/Discussion #gWater is precious on California#fs Central Coast#h is a popular tag on dining table showing the importance of water conservation. The water for sprinkling at our school is 20% of the total consumption. Thus, this project is much contributed to demonstrate how we can save water and create some values from the originally wasted energy. The engineering in the real world is tough, but we have overcome many issues and learned a lot. We wish to expand the existed system in the campus and apply this concept in various applications.</p>	
Summary Statement The Project takes renewed energy from wasted water of the Stevenson School's sprinkling system for the use of energy-efficient applications.	
Help Received School Maintenance helped to install solar panel	