Design and Development of an Integrated Control System for Hybrid Clean Energy Lighting

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This research aims to further develop the field of clean energy and electrical engineering principles through the creation of a control scheme for a wind and solar powered helical wind turbine. The vertical-axis wind turbine?s blades will be created using 3D-printed materials, and covered in bamboo veneer. Solar panels will be installed along side the wind turbine to convert the sun?s rays into an electrical current. The electrical control system will efficiently charge a battery, as well as autonomously determine whether to utilize wind or solar power, depending on which delivers more current. It will further be used to power dynamic Light Emitting Diodes (LEDs) attached to the turbine for an energy efficient lighting system. The control scheme for a clean energy system is one that is not well documented in society today; this design will provide an insight into the development of both wind and solar energy conversion for a greener planet.