

Gabriel
Science and Engineering Challenge

This is the third iteration of a research and development project to improve a variable energy system. The system is composed of a commercial-grade vertical axis wind turbine (VAWT) blade with embedded solar cells to generate supplemental electricity. Digital models were developed to engineer and design a 3D-printed wind turbine blade. Then concepts from physics were applied to solve problems for output efficiency. A major disadvantage of conventional wind turbines is intermittency and failure to produce electricity when the wind resource is compromised. This study provides an innovative approach that combines twin technologies to overcome inefficient and variable renewable energy systems. The material properties of the turbine's blades can be adjusted such that the system is economically viable through the end of life. Secondly, another embedded resource with storage capacity can address the intermittency. The researcher for this project has applied for and received a provisional patent to advance this technology. This year a utility patent was filed which demonstrates that the standards have been met to satisfy legal requirements to move toward commercialization.

