

## **A Wind Farm Made of Kites**

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### **Abstract**

The team is working to create a wind farm made of kites. The team's system is a sustainable solution, which provides a renewable source of power for all. The kites will be built using ecologically friendly and easily recyclable products. The overall design of the system consists of a rigid-wing structure attached to a cable with a length sufficient to reach high-altitude winds for maximum lift. The cable is attached to a winch and pulley system such that the aerodynamic lift of the rigid wing pulls on the winch, spinning a generator, thus generating electricity. Once maximum altitude is reached or optimal altitude is exceeded, the kite will return to a lower altitude and repeat this cycle to generate electricity. The kite will be automated, much like a drone system, and will maneuver in a figure-eight pattern. The auto-pilot feature automates the entire system once it is established and configured, allowing the kite to take flight, or land depending on the current wind activity. The figure-eight pattern has two main functions. First, to maintain stability of the kite and prevent entanglement of the cable system. Second, to localize variations in the speed of the wind are averaged across a larger area, ensuring the average power of the kite is enhanced. The kites will be designed with the capability to take off in ground-level wind speeds, eliminating the need for large fans to assist the take-off process, one of the main expenses of other designs.