

HIGH ALTITUDE WIND ENERGY USING KITE- A REVOLUTION IN RENEWABLE ENERGY



PROJECT REPORT

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ABSTRACT

The problems posed by electric energy generation from fossil sources include high costs due to large demand and limited resources, pollution and CO₂ production and the geopolitics of producer countries. These problems can be overcome by alternative sources that are renewable, cheap, easily available, and sustainable. However, current renewable technologies have limitations. The goal of this project was to study the feasibility of using tethered kites to generate power from the wind. Generating electricity using kites instead of wind turbines may have certain advantages, particularly for developing nations. These include generating power at low cost while eliminating certain environmental problems associated with wind turbines. Another advantage is that kites can fly at greater heights than wind turbines can operate. Since wind speed increases with height, and available power is proportional to wind speed cubed, the wind power potential is larger for kites. A literature review was conducted of previous studies of kite power systems. Initially a mechanism was designed to convert the oscillating tether tension caused by the vertical motion of a kite into rotary shaft motion to drive a generator. Based on the studies made on the characteristics of the kite, another mechanism was designed which converts the continuous pull of the kite into electric power. The design uses a commercially available parafoil kite which is 4.5 meters squared in size.