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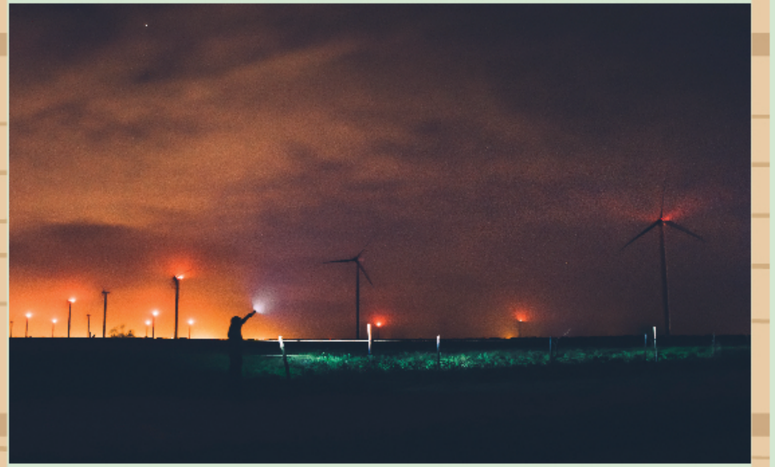
Airborne Energy Systems



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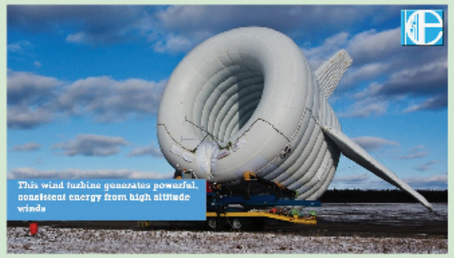

Intro to the ARTICLE

The whole world now is looking forward to use a clean and renewable energy sources to produce electricity like solar energy and wind energy …etc. All of us know these sources well but we will talk specifically about wind energy, Wind power is the use of air flow through wind turbines to provide the mechanical power to turn electric generators.

AWESOME

Wind power, as an alternative to burning fossil fuels, is plentiful, renewable, widely distributed, clean, produces no greenhouse gas emissions during operation, consumes no water, and uses little land. The net effects on the environment are far less problematic than those of nonrenewable power sources.

Let me ask a question which is "How Does a Wind Turbine Work?" Wind turbines produce electricity by using the natural power of the wind to drive a generator. The wind is a clean and sustainable fuel source, it does not create emissions and it will never run out as it is constantly replenished by energy from the sun.

In many ways, wind turbines are the natural evolution of traditional windmills, but now typically have three blades, which rotate around a horizontal hub at the top of a steel tower. Most wind turbines start generating electricity at wind speeds of around 3-4 meters per second (m/s) generate maximum 'rated' power at around 15 m/s and shut down to prevent storm damage at 25 m/s or above. As we have just know the wind energy is perfect but it costs money to use it, According to CAPEX cost breakdown structure the tower represents a 25% and the blades represents a 20% of the total cost of the turbine.

So what would happen if we removed the tower from it and the blades? , of course the cost would be reduced. Some companies presented new designs for a new wind turbines called "Airborne wind Turbine".

An airborne wind turbine is a design concept for a wind turbine with a rotor supported in the air without a tower thus benefiting from more mechanical and aerodynamic options, the higher velocity and persistence of wind at high altitudes, while avoiding the expense of tower construction, or the need for rings. An electrical generator may be on the ground or airborne.

Follow

An air rotor wind turbine concept based on the Magnus Effect has been proposed and is kept uplift by helium gas generating 4kW of rated power, and costing about $10,000, with a payback period ofabout6 years. It would be anchored by a tether that can extend up to 1,000 feet above ground. A height of 400 feet is enough to catch the minimum 3 m/s wind speed needed to sustain an adequate supply of electricity. The turbine spins in the air turning the generators. The rotation stabilizes the turbine while energy is transferred down to the ground through the tether.

There is other designs that target the main idea like kite energy or Makani design of airborne turbine that uses a small plan that attached to a generator.