

WIND ENERGY: ADVANTAGES AND DISADVANTAGES

What is wind energy?

Wind, that is moving air, possesses some kinetic energy due to its high speed.

Wind is a result of the solar energy, as heating of land results in movement of air.

The most common application of wind could probably be kite flying! Or even paragliding, sail boats etc. Well these activities are definitely not possible without wind. Ever wondered what else it could be useful for?? Wind energy can be harnessed and used for generating electricity or for other smaller purposes by a windmill. In olden times, windmills were used to draw water out of wells or to grind flour etc. It is the rotatory motion of the shaft in a windmill that is used to rotate the turbine and convert it to the form of energy we need it in.

The main advantage of wind energy is that harnessing it doesn't disrupt natural processes or harm the environment, unlike a lot of other energy sources. To generate electricity on a large scale, a number of windmills are set up over a large area, called a wind energy farm. Such areas need a wind speed of 15kmph.

Lets discuss advantages and disadvantages of Wind Energy.

Advantages of Wind Energy

- 1) Wind Energy is an inexhaustible source of energy and is virtually a limitless resource.
- 2) Energy is generated without polluting environment.
- 3) This source of energy has tremendous potential to generate energy on large scale.
- 4) Like solar energy and hydropower, wind power taps a natural physical resource.
- 5) Windmill generators **don't** emit any emissions that can lead to acid rain or greenhouse effect.
- 6) Wind Energy can be used directly as mechanical energy.
- 7) In remote areas, wind turbines can be used as great resource to generate energy.
- 8) In combination with Solar Energy they can be used to provide reliable as well as steady supply of electricity.
- 9) Land around wind turbines can be used for other uses, e.g. Farming.

Disadvantages of Wind Energy

- 1) Wind energy requires expensive storage during peak production time.
- 2) It is unreliable energy source as winds are uncertain and unpredictable.
- 3) There is visual and aesthetic impact on region.

- 4) Requires large open areas for setting up wind farms.
- 5) Noise pollution problem is usually associated with wind mills.
- 6) Wind energy can be harnessed only in those areas where wind is strong enough and weather is windy for most parts of the year.
- 7) Usually places, where wind power set-up is situated, are away from the places where demand of electricity is there. Transmission from such places increases cost of electricity.
- 8) The average efficiency of wind turbine is very less as compared to fossil fuel power plants. We might require many wind turbines to produce similar impact.
- 9) It can be a threat to wildlife. Birds do get killed or injured when they fly into turbines.
- 10) Maintenance cost of wind turbines is high as they have mechanical parts which undergo wear and tear over the time.

Even though there are advantages of wind energy, the limitations make it extremely difficult for it to be harnessed and prove to be a setback.

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