



A windmill is defined as a machine that converts the kinetic energy of the wind into mechanical energy. All the blades of windmill always rotate in a clockwise direction. The first windmill was designed in the year 1854 by Daniel Halladay from the United States.

Types of Windmills

There are two basic types of windmills based on their axis of rotation, and they are:

- Vertical axis windmills
- Horizontal axis windmills

There are four types of horizontal axis windmills:

- Post mill
- Smock mill
- Tower mill
- Fan mill

How Do Windmills Work?

The number of blades of the windmill was determined after many trial and error methods. It was found that three blades worked the best and that's how every windmill has three blades.

The energy source for windmill is wind. When the blades come in contact with the wind, the blades move such that the shaft starts to spin, resulting in the production of electricity. The generator converts the mechanical energy into electrical energy.

Components of Windmill

Following are the components of windmill:

- **Blades:** These are the essential component of the windmill, and they control the functioning of rotor speed.
- **Rotor:** Rotor is also known as a propeller.
- **Anemometer:** This component is used for measuring the wind speed.
- **Tower:** This is the support system holding the blades and propeller together.

Uses of Windmill

The main purpose of windmill is to convert wind energy into electrical energy, and when electrical energy is obtained, the following are the ways it is used:

- For pumping of groundwater.
- Extraction of oil from the seeds.
- Milling of the grains.

Types of Windmill

There are two types of windmills. This division is based on the axis of the rotation. They mainly divide into:

- Vertical axis windmills
- Horizontal axis windmills

The horizontal axis windmills further divide up into the following:

- Post mill
- Smock mill
- Tower mill
- Fan mill

How Windmills Work

Now we know that there isn't just a single type of windmill. There are many, however, the functioning of each is more or less the same.

There may be a slight difference in operation depending on the technology they use. The sails or blades of a windmill collect the wind that is flowing over it. It thereon uses the lift to turn the blades.

After that, the blades connect to a drive shaft. This is so because when the blades turn due to the wind, they rotate the drive shaft. Furthermore, it often connects to a millstone or an electric generator. Finally, this helps in generating electricity.

History of Windmills

The first windmill was used around 500-600 A.D. It was the discovery of Persians. Of course, the earlier ones looked quite different from what we have now.

The Persian ones had vertical sails that were created from reeds which attached to a central vertical shaft with struts. There is also a popular theory of Chinese using windmills.

However, it isn't documented properly up until 1200 A.D. Around that time, Europeans also started using windmills. Some of the very same structures are also now preserved as historical artefacts.

Applications of Windmill

It is very clear by now that a windmill carries huge importance. It is used for quite a number of purposes. Some of the common applications of windmills are as below:

- Pumping water
- Saw-milling of Timber
- Milling grains
- Drainage-pumping
- Oil extraction from seeds
- Machining

Processing of commodities like:

- Tobacco
- Cocoa
- Dyes
- Spices Paints
- Stock-watering

The most important one is producing electricity; however, the wind turbines mainly cover that part. Nonetheless, we see how they are so important in a lot of fields.

Moreover, windmills are a very environment-friendly way that allows us to ease up our work without damaging the environment.

