

Chapter:4

(Interpret Wind Energy Generation)

Lecture-2



WIND TURBINES

A wind turbine is a machine for converting the kinetic energy in wind into mechanical energy.

WINDMILLS

If the mechanical energy is used directly by machinery, such as a pump or grinding stones, the machine is usually called a windmill.



WIND TURBINES

If the mechanical energy is then converted to electricity, the machine is called a wind generator.



TYPES OF WIND TURBINES

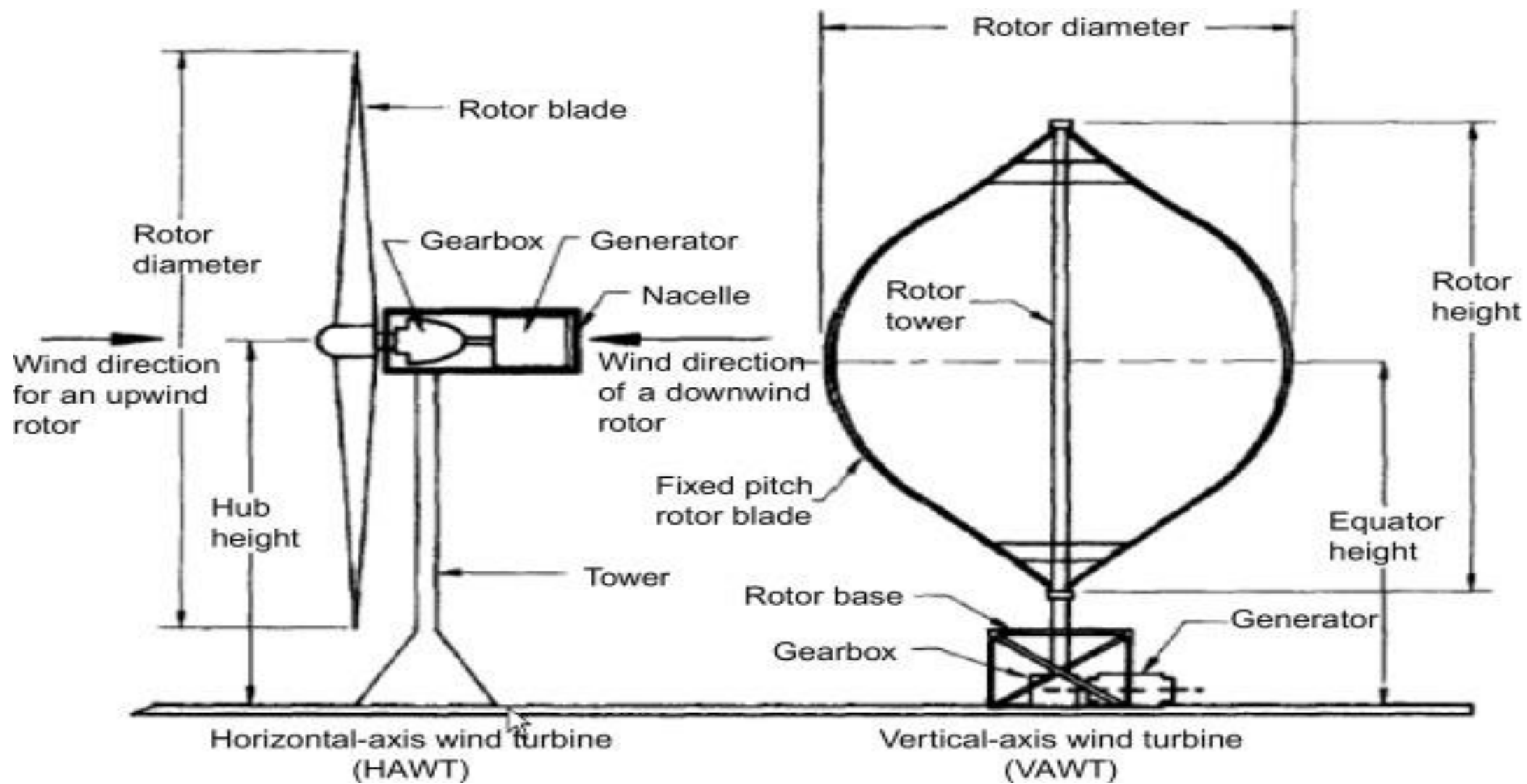
Wind turbines are classified into two general types: horizontal axis and vertical axis. A horizontal axis machine has its blades rotating on an axis parallel to the ground. A vertical axis machine has its blades rotating on an axis perpendicular to the ground. There are a number of available designs for both and each type has certain advantages and disadvantages. However, compared with the horizontal axis type, very few vertical axis machines are available commercially.



Vertical Axis Wind Turbine
(VAWT)



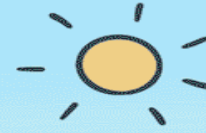
Horizontal Axis Wind Turbine
(HAWT)



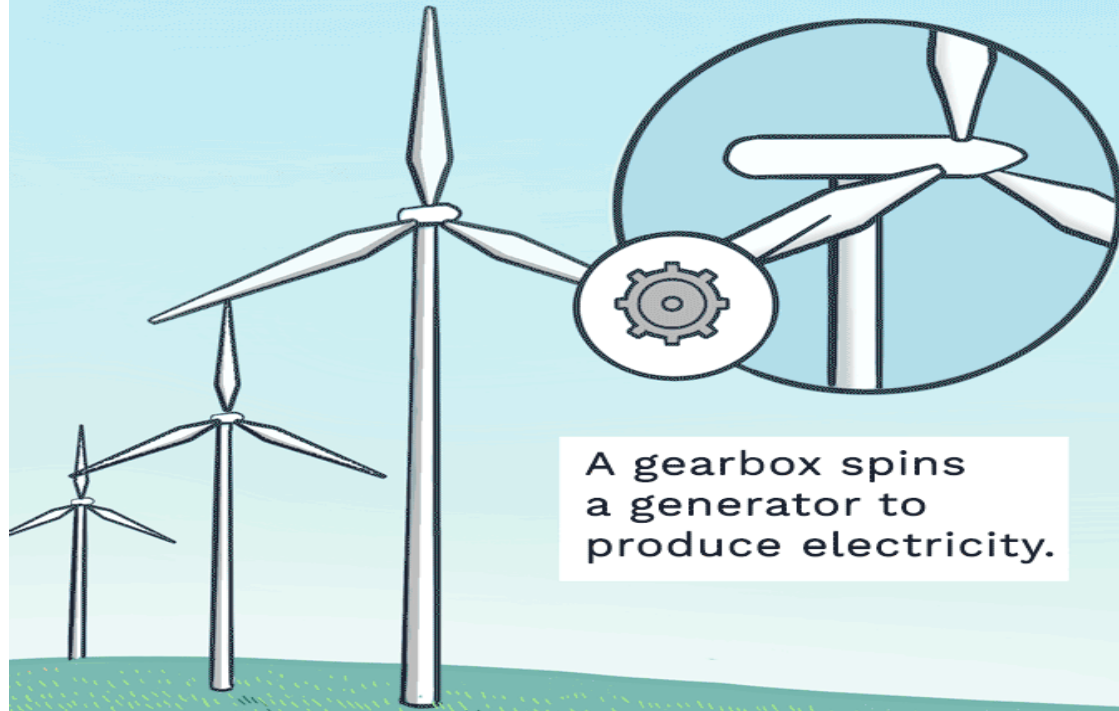
How Does Wind Energy Work?

Wind blows past turbines, rotating their blades.

The kinetic energy is transformed into mechanical energy.



Electricity can then be stored or transported to grid for distribution.



Transformer converts electricity to appropriate voltage.

A gearbox spins a generator to produce electricity.

