

Glossary

Anemometer

an instrument used to measure wind speed.

Axis

the line about which a rotating body, such as the rotor of a turbine, turns.

Beaufort Scale

a scale that uses numbers from 0 to 12 to categorize wind speed based on observing. The scale was created by the British naval commander Sir Francis Beaufort around 1805.

Biodiesel

a renewable fuel for diesel trucks, cars, buses, and tractors that is made from plants.

Chemical Energy

energy that can be released by a chemical reaction. A chemical reaction takes place inside a battery when the battery is part of a complete electrical circuit.

Constraint

a restriction on a design, such as performance, cost, and scheduling.

Criteria

the rules used to judge something.

Cyclone

any storm with circulating winds (a "twister") formed over water. Also refers to a hurricane that occurs in the Indian Ocean.

Electrical Energy

energy made available by the flow of electric charge through a conductor.

Electron

an elementary particle of an atom with negative charge.

Energy

refers to the ability to do work. It is defined as power over time. The unit of energy that appears on your electrical bill is kilowatt hour (kWh). A 1000 watt hair dryer uses one kWh of electricity if it is on for one hour. Different forms of energy include electrical, solar, wind, thermal, mechanical, and chemical.

Engineering Design Process

a process used by engineers to help develop products.

Force

a force is a push or a pull that results in a change of an object's velocity or direction.

Generator

a device that converts mechanical energy into electrical energy.

Hurricane

a storm with very fast circulating winds (a "twister") formed over water near North or South America.

Kilowatt

1,000 watts is equal to 1 kilowatt (kW). The unit of energy that appears on your electrical bill is kilowatt hour (kWh). A 1000 watt hair dryer uses one kWh of electricity if it is on for one hour.

Kinetic Energy

the energy of an object in motion.

LED

light-emitting diode: a semiconductor diode that emits light when conducting current and is used in electronic equipment (e.g. a string of holiday lights).

Machine

a device that does work and uses energy.

Megawatt

1,000,000 watts is equal to 1 megawatt (MW). One MW is enough power to light 100,000 standard 100 watt light bulbs or to operate 10,000 hair dryers.

Mechanical Energy

the energy an object possess due to its motion or its stored energy of position.

Motor

a device that converts electrical energy into mechanical energy to do work.

Multimeter

a device consisting of one or more meters used to measure two or more electrical quantities in an electric circuit, such as voltage, resistance, and current.

Nacelle

the housing that contains the generator and gear box of a wind machine mounted on top of the supporting tower.

Potential Energy

the energy stored in an object because of its position.

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Power

energy transferred or work done per unit of time. It is measured in watts. A watt is a measure of power at a specific instant. A 100 watt light bulb changes 100 watts of electricity to 100 watts of light and heat.

Prototype

an early attempt at a working model for an idea.

RPM

stands for revolutions per minute.

Rotational Symmetry

an object with rotational symmetry is an object that looks the same after a certain amount of turning.

Rotor

a rotating part of an electrical or mechanical device.

Rudder

A blade at the rear of the turbine that keeps the turbine turned into the wind.

Shaft

a revolving rod that transmits power or motion.

Solidity

the ratio of rotor blade surface area to the area that the rotor blade passes through; the amount of swept area occupied by the blades.

Swept Area

the area of the circle that the blades of a turbine pass through.

Tetraflexagon

in geometry, flexagons are flat models made from folded strips of paper that can be folded, or flexed, to reveal a number of hidden faces. A tetraflexagon has four faces.

Tornado

a storm with very fast circulating winds (a "twister") formed over land.

Torque

force which causes something to rotate, turn, or twist.

Tower

column upon which the nacelle is supported.

Transformer

converts high voltage to low voltage or low to high.

Tropical Storm

a group of thunderstorms with fast wind speeds rotating in a spiral formed over water.

Tsunami

an unusually large sea wave produced by a seaquake or undersea volcanic eruption.

Turbine

any of various machines having a rotor, usually with blades, driven by the pressure and movement of water, steam, or air. A turbine converts kinetic energy of a moving substance (such as air) into mechanical energy.

Typhoon

a storm with very fast circulating winds formed over water in the South Pacific Ocean.

Voltage

the force or pressure pushing the electrons. It is measured in volts.

Wind

air in motion, ranging from still (no wind) to a breeze (slight wind) to a gale (strong wind) or hurricane.

Windmill / Wind Turbine

a device that converts wind energy to other forms of energy such as mechanical or electrical.

Wind Farms

a collection of wind turbines located on the same area and used to generate electricity.

Wind Energy

energy harvested from moving air in the atmosphere. Wind energy is dependent on atmospheric conditions such as temperature and pressure differences.

Work

occurs when a force is applied over a distance.