SOLAR/WIND ENERGY

Solar Energy

Ultimately, solar energy is when energy is derived from sunlight. There are two main types of solar energy. The first type of solar energy is thermal solar energy. Thermal energy is used to generate electricity and heat water. Water can be heated actively or passively. Passive heating takes place when water that is preheated by the sun is used in a hot water tank. Active heating takes place when a solar hot water system has a heating element inside of it that heats the water on sunny days. The second type of solar energy is electrical energy, used in such things as solar panels, which capture the sun's energy and convert it into electricity.

How Do Solar Panels Work?

To supply solar power to a home photovocalic panels are installed, most often on the roof. Photovocalic (PV) panels is the technology that directly converts into electrical energy. A photovocalic cell (also known as a solar cell) is made up of a thin square or round semi-conductive material like silicone. The material is given a special treatment to create an electrical field. On one side it is negative, and on the other side it is positive. To create an electrical circuit conductors are attached to each side. When sunlight hits the solar cell electrons are loosened from the material. The electrons get caught in the circuit creating an electrical current.

Did you know…?
The term photovocalic comes from the word 'photo', meaning light, and the word 'vocalic' meaning electricity.

Wind Energy

Wind power is exactly as it sounds, wind is used to generate electricity. The sun actually has a lot to do with creating wind. In some places, especially those around the Equator, get far more direct sunlight than areas closer to the North and South poles. So air from these areas warm up and rise. Then, cooler air from surrounding areas moves in to fill space left by rising air, and creates a surface wind. The device used to create wind energy is called a generator, or more commonly, a wind turbine. The turbine is the part that spins and sits at the top of a concrete or steel tower. A turbine can range anywhere from 150 to 280 feet blade tip to blade tip, and the tower can range anywhere from 160 to 320 feet. The size of the tower is determined by the size of the turbine. The most efficient type of wind turbine is a horizontal axis turbine. It is a unit that stays in one place and is attached to the top of the tower. Usually there are three blades attached to the revolving part of the unit known as the rotor.

Did you know…?
In many cases wind turbines are computer controlled. They can be shut down if wind currents become too strong.

How Do Wind Turbines Work?

Wind causes the blades of the turbine to spin. The rotor moves with blades, and at the same time moves a low-speed shaft. This shaft is connected to gears on the inside of turbine, and belong to a high-speed shaft. This increased the number of rotations per minute. The generator, which is attached to the high-speed shaft converts energy created by the motion (known as kinetic energy) of the gears into electrical energy. Wires inside the tower carry the electricity to the grid, battery, or other source where it is stored.

Bibliography

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