

## **BASICS OF ENERGY**

Written by Administrator

Wednesday, 16 November 2011 02:39 - Last Updated Wednesday, 16 November 2011 02:43

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There are 2 major type of energy that exists in essence and these are namely the Potential Energy and Kinetic Energy.

Potential Energy is the type of energy that is stored through compression like the compressed spring or energy that is available when the object is kept at a higher place than ground level. Kinetic Energy is energy that happens through motion or movement of atoms, molecules, waves and objects.

Let us now take a closer look at both the Potential Energy and Kinetic Energy. Potential Energy consists of 4 major types namely Gravitational Potential Energy, Mechanical Energy, Chemical Energy and Nuclear Energy whereas Kinetic Energy consists of Motion Energy, Heat Energy, Sound Energy and Radiant Energy.

### **POTENTIAL ENERGY:**

#### **Type 1: Gravitational Potential Energy**

Gravitational Potential Energy is possessed by an object positioned above the ground. When an object is lifted higher from its current position, it acquires this energy. For example, if a snow boarder were to fall from a high peak, he has then potential energy.

On earth the gravity is given as  $9.80665 \text{ m/s}^2$  (\*1) whereas and on the moon the gravity value is much lesser. If the same object is to be kept at the moon with the same altitude from ground, the gravitational potential energy will be very much lesser as gravity strength of the moon is just 1/6th of earth, measuring as much as  $1.63 \text{ m/s}^2$ .

#### **Type 2: Mechanical Energy**

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Mechanical Energy is energy stored through tension like a compressed spring or a stretched rubber band.

### **Type 3: Chemical Energy**

Chemical Energy is energy stored in bondages of atom and molecules. Chemical energy will be converted to heat or thermal energy during the burning process like wood on a fireplace. Some examples of stored Chemical Energy are batteries, biomass, petroleum, natural gas and coal.

### **Type 4: Nuclear Energy**

Nuclear Energy is the energy stored in the nucleus of an atom. It is the energy that holds the nucleus together. Energy is released when Uranium atoms are split in a process called fission at the Nuclear Power Plant or in the fusion process when the nucleus of hydrogen atoms combines at the sun.

## **KINETIC ENERGY:**

### **Type 1: Motion Energy**

Motion Energy is energy stored in the movement of objects and it increases by the speed of motion. Wind energy is an example of motion energy

### **Type 2: Sound Energy**

Sound Energy is the energy produced by objects that vibrate. Its speed depends on the. Example: Sound wave that is traveling from a musical instrument like guitar is picked up by our eardrums. Factors affecting the speed of sound are nature of material, medium, temperature,

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humidity and pressure.

The World Book Encyclopaedia. Vol 18 states sound travels 1,268 feet (386 meters) per second through air at 212 °F (100 °C).

### **Type 3: Heat / Thermal Energy**

Heat Energy is generated when atoms and molecules that vibrates in an object moves and collides with each other. An example of Thermal Energy on earth is the Geothermal Energy.

### **Type 4: Radiant Energy**

Radiant Energy is the energy of Electromagnetic waves. X-Rays, Gamma Rays and Radio waves are examples of Radiant Energy. Light rays from the sunlight are also known as Radiant Energy. The speed of light has been measured in a vacuum environment. It is recorded to be 299 792 458 metres per second.

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Note:

(\*1) The information pertaining to the SI unit such as the value of gravity & speed of light is given by the booklet International System of Units (SI) 8th Edition published by the International Committee for Weights and Measures.

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(\*2) Hawai'i Institute of Geophysics and Planetology, University of Hawai'i, 1996 released a fact sheet called Moon ABCs factsheet stating that the gravitational pull of the moon is 1.63 m/sec/sec