

Energy

Def: Energy is the capacity for doing work.

Kinds

1. Kinetic energy

2. Potential energy

Kinetic energy:

It is the energy possessed by body due to its motion. $K.E = \frac{1}{2}mv^2$ mass of moving body \times speed

Potential Energy:

Energy possessed by body due to change in its position.

i) Gravitational Potential Energy:

When an object is moved against force of gravity its energy is Gravitational potential energy.

ii) Elastic PE It is property of a body due to which it regains its original shape

after removal of distorting forces.

Sources of energy:

- 1- Renewable sources of energy
- 2- Non-renewable sources of energy

Renewable Sources of Energy:

The sources of energy which can be replenished (used)

Non-Renewable sources of energy

Which cannot be replenished like coal, oil and natural gas.

Primary ^{& Secondary} sources of energy:

Electricity is the most common and popular form of energy which is actually itself made from energy released by burning coal or oil or by using nuclear fuel or water power. Each of these four sources of energy is called a primary source. Electricity

is a secondary source, because it is produced from a primary source.

Conventional Sources of Energy.

The main source of organic compounds is fossil fuels. These fossil fuels are categorized as coal, natural and petroleum. These are very good sources of energy.

a) Coal: Coal was formed due to biochemical and environmental decay of dead parts of plants. It took 500 million years for formation of coal. Pakistan has 184 billion tons total reservoirs of coal.

b) Natural Gas: Natural gas is a ~~mineral~~ mixture of low boiling hydrocarbons.

Natural gas is usually used in cement industry, fertilizer industry, As domestic fuel

As fuel for cars in the form of
CNG (Compressed Natural Gas)

c) Petroleum:

"Mineral oil in refined form is called
Petroleum".

Petroleum is subjected to fractional distillation
to get large number of important fractions.

These fractions are excellent fuels.

Some of the important fractions of petroleum
are:

Gasoline

Diesel oil.

Kerosene oil

Wax oil

Naptha

Lignin

Motor oil.

d) Hydro electricity:

Electric power obtained by conversion of

potential energy of water into electricity is known as hydroelectricity.

(e) Kinetic Energy of air:

Fast-moving air possesses enough kinetic energy, which may be converted into the mechanical energy of rotors. But it is not a very useful source of energy because the direction and speed of air cannot be controlled.

Non-Conventional Sources of Energy

A steady decline in the availability of conventional sources of energy forced a search for new types of energy. Of these new types, three are worth working.

1. Solar Energy
2. Tidal Energy
3. Nuclear Energy

Solar energy is simply the light and heat that come from the sun.

1- Solar Energy

Energy radiated by the sun is indispensable for maintenance of life on our planet. Solar energy equivalent of 20 lacs horse-power is received per square kilometre of the earth.

But much of it goes waste. Man has not so far been able to convert it into more useful forms, on a larger scale. The spaceships do have electronic equipment that converts solar energy into electric energy power but the method employed is too expensive to be a solar energy into

Tidal Energy: As a matter of principle, the energy possessed by tidal waves should be convertible into mechanical and electrical energy.

Nuclear Energy: Nuclear energy would probably be largest source of energy in the future. The basis of this energy is the conversion of mass into energy is not an easy job.

Tidal Energy

Tidal energy is power produced by the surge of ocean waters during the rise and fall of tides. Tidal energy is a renewable source of energy.

Nuclear energy

The energy released during nuclear fission or fusion, especially when used to generate electricity.