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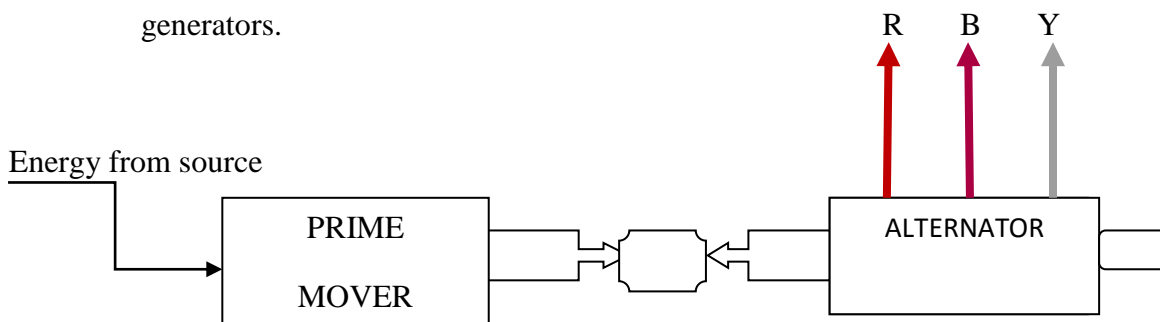
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GENERATION OF ELECTRIC ENERGY

The conversion of energy available in different forms in nature into electrical energy is known as

Generation of Electrical Energy. Therefore Electric energy generation is the process of extracting electrical energy from other forms of energy such as potential and kinetic energy.

Electric energy is most often generated at a power station by means of electromechanical generators.



ELECTROMECHANICAL GENERATORS

Electrical energy is produced in an electrical generator (i.e. **Electromechanical Generator**) by rotating an electromagnet (i.e. **rotor**) within a frame of stationary coils (i.e. **stator**).

As the electromagnet turns the magnetic field "it cuts" the stator windings and then it induces alternating voltages in the coils which result to the electrical energy outside the generator

Electromechanical generators consist of two major parts: **Turbine** and **Alternator**, the turbine is a mechanical device that is use to derive the alternator, while the alternator is the device that converts the

mechanical energy from the turbine to electrical energy, it consist of two major part also the ROTOR and the STATOR. This electromechanical generator is primarily driven by heat engines fueled by chemical combustion or nuclear fission.

But also by other means such as the kinetic energy of flowing water and wind. There are many other technologies that can be and are used to generate electricity such as solar photo voltaic and geothermal.

SOURCE OF ENERGY

Electrical energy can be generated from either one these natural available energies:

1) The Sun (2) The Wind (3) Water (4) Fuels (5) Nuclear energy

- Sun energy is the primary source of renewable energy, being it water, wind and biomass e. t. c. and also sun energy is applicable in solar power station whereby the sun light rays radiate on the photo voltaic panel.
- The wind energy is used to run the wind mill which drives a small generator.
- Water energy can be converted into mechanical energy with the help of water turbines.

The water turbine drives the alternator which converts mechanical energy into electrical energy, this plant is known as hydropower plant.

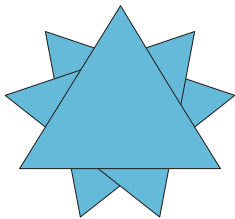
- Fuel energy can be categorized as follows; Solid fuel as coal, Liquid fuel as oil and gas fuel as natural gas. The heat energy of these fuels is converted into mechanical energy by suitable prime movers such as steam engines, steam turbines, internal combustion engines, in order to drive alternator.
- The heat produced due to nuclear fission is utilized to raise steam with suitable arrangements. The steam can run the steam turbine which in turn can drive the alternator to produce electrical energy.

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