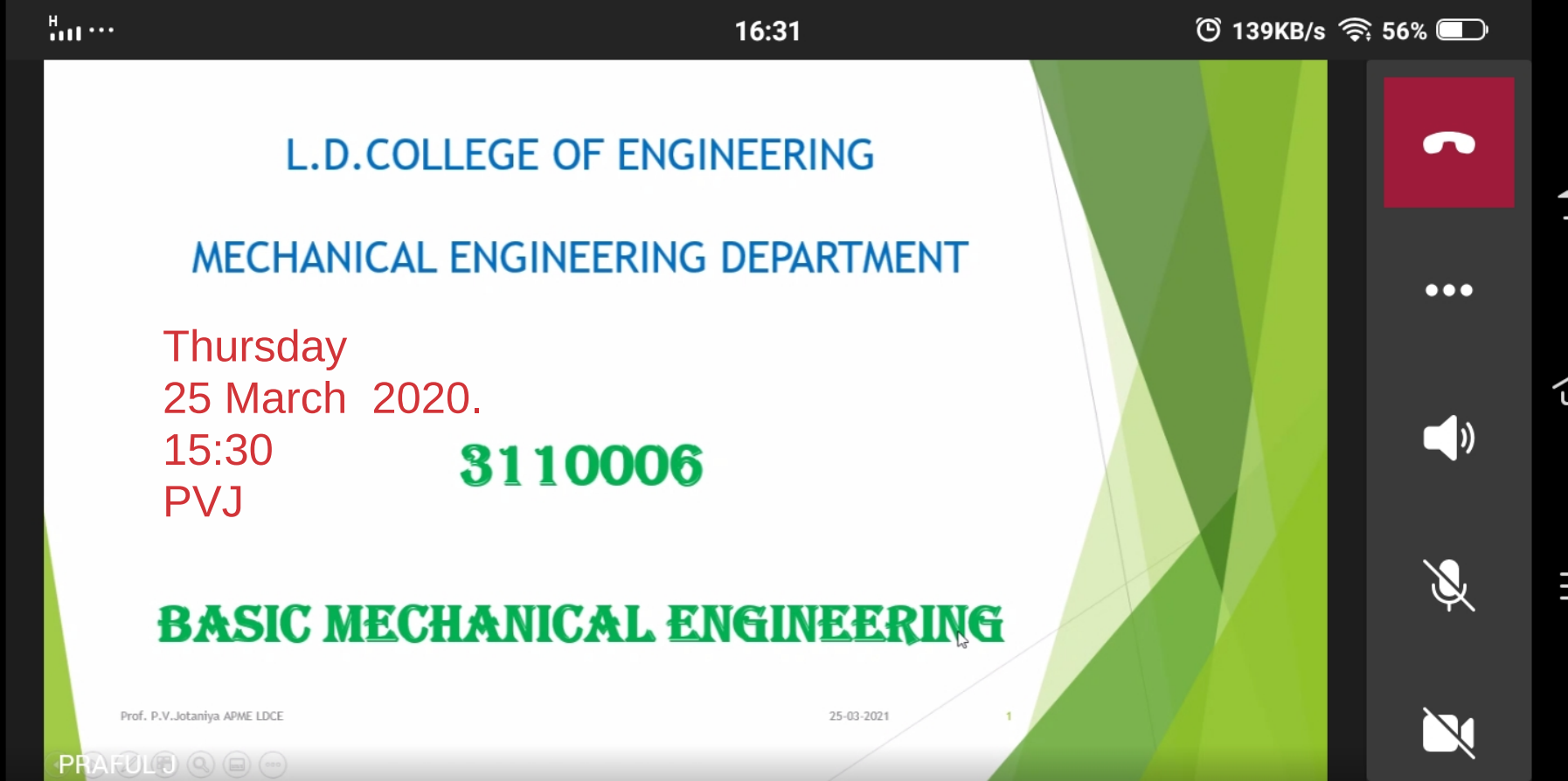
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L.D.COLLEGE OF ENGINEERING
MECHANICAL ENGINEERING DEPARTMENT
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25 March 2020.
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BASIC MECHANICAL ENGINEERING
Prof. P.V.Jotaniya APME LDCE
25-03-2021
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PRAFULJ

INTRODUCTION:

Prime mover

- A prime mover is defined as a device which converts energy from natural sources into mechanical energy or useful work (shaft power).
- Examples of prime movers are: Wind turbine, steam turbine, water turbine, I.C. Engine, etc.

Sources of energy:

- Prime movers use various natural sources of energy like fuel, water energy, atom, biomass, wind etc.

1. Fuel:

When fuel is burnt, heat energy is generated.

Amount of heat generated by burning of fuel depends upon calorific value of that fuel.

By using heat engine, the heat energy is converted into mechanical energy (shaft power). Various types of fuels are coal, petrol, diesel, gas etc.

2. Water Energy:

Water stored at high elevation contains potential energy.

When water starts flowing, potential energy gets converted to kinetic energy.

Hydraulic turbine is a prime mover which converts kinetic energy of flowing water into mechanical energy.

For example water stored in dam contains potential energy.

3. Atoms (Nuclear Energy):

Heat energy produced by the fission or fusion of atoms may be used to produce heat.

This heat is used to produce shaft power by heat engines.

- ✓ Nucleus is divided into two or more fragments=Fission
- ✓ Two lighter atomic nuclei fuse to form a heavier nucleus= Fusion

4. Non-conventional Energy Sources:

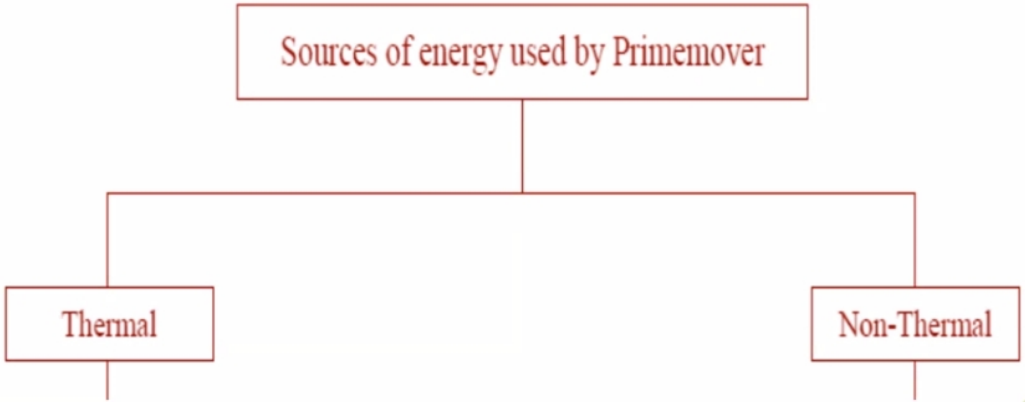
These energy resources replace themselves naturally in a relatively short time and therefore will always be available.

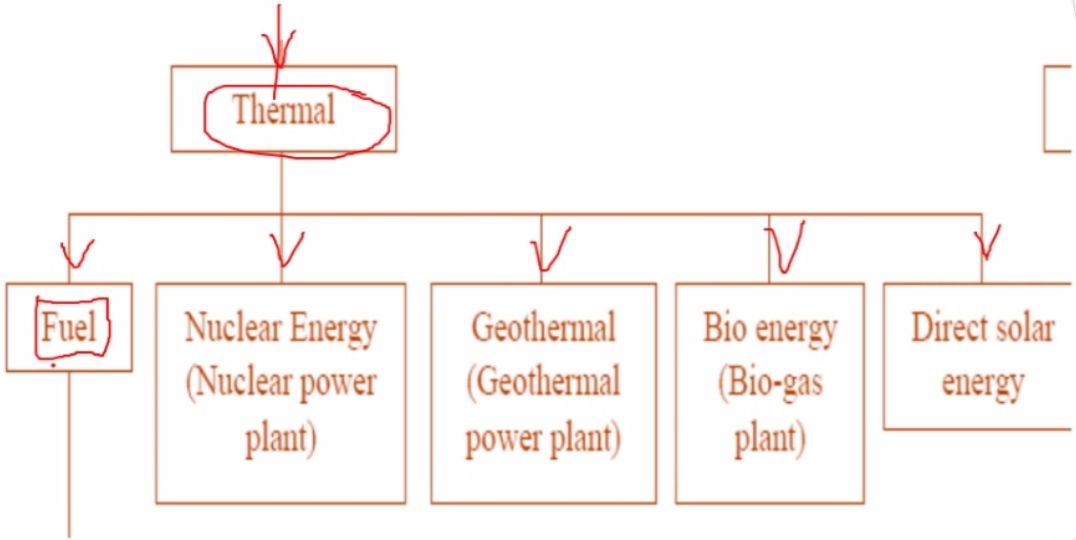
Examples of these resources are

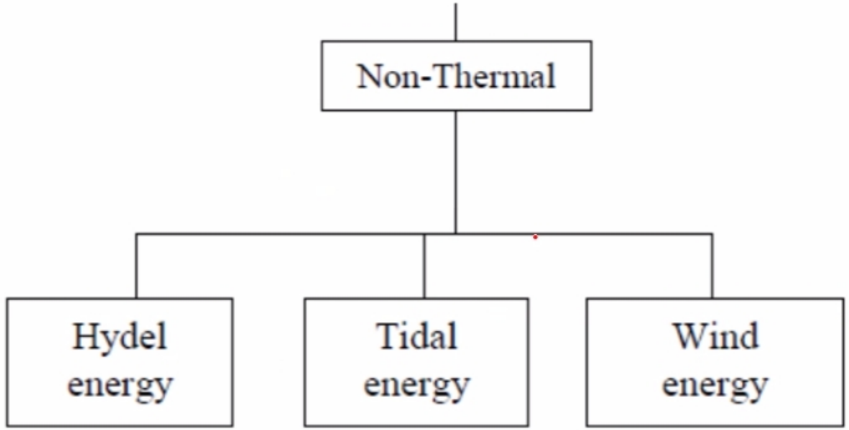
- ✓ Solar energy
- ✓ Wind energy,
- ✓ Tidal energy,
- ✓ Bio energy,
- ✓ Solid wastes etc.

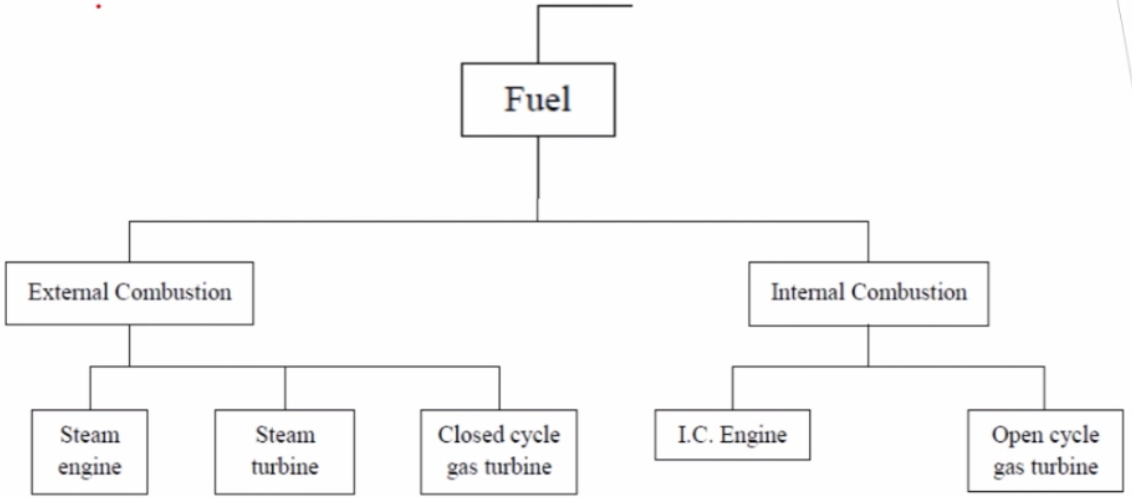
Almost all non-conventional energy resources offerpollution free environment.

Types of prime movers




Thermal
Fuel
Nuclear Energy (Nuclear power plant)
Geothermal (Geothermal power plant)
Bio energy (Bio-gas plant)
Direct solar energy




Fuel
External Combustion
Internal Combustion
Steam engine
Steam turbine
Closed cycle gas turbine
I.C. Engine
Open cycle gas turbine