



CLASSIFICATION OF POWER PLANTS



SOURCES OF ENERGY

Primary energy sources

Coal, Oil, Nuclear fuels, Water

Wood → Heat

Candles, Oil lamps → Light

Secondary energy sources

→ Electricity

Conventional sources of energy → Non-renewable sources of energy

Non-conventional sources of energy → Renewable sources of energy

Fossil fuels → Coal, Oil, Natural gas



TYPES OF POWER PLANT

1. Non-conventional Energy Source

- a. Solar energy
- b. Wind energy
- c. Geothermal energy
- d. Tidal energy
- e. Biomass energy

2. Conventional Energy Sources

- a. Solid, Liquid and gaseous fuels
- b. Hydraulic energy





CLASSIFICATION OF POWER PLANTS

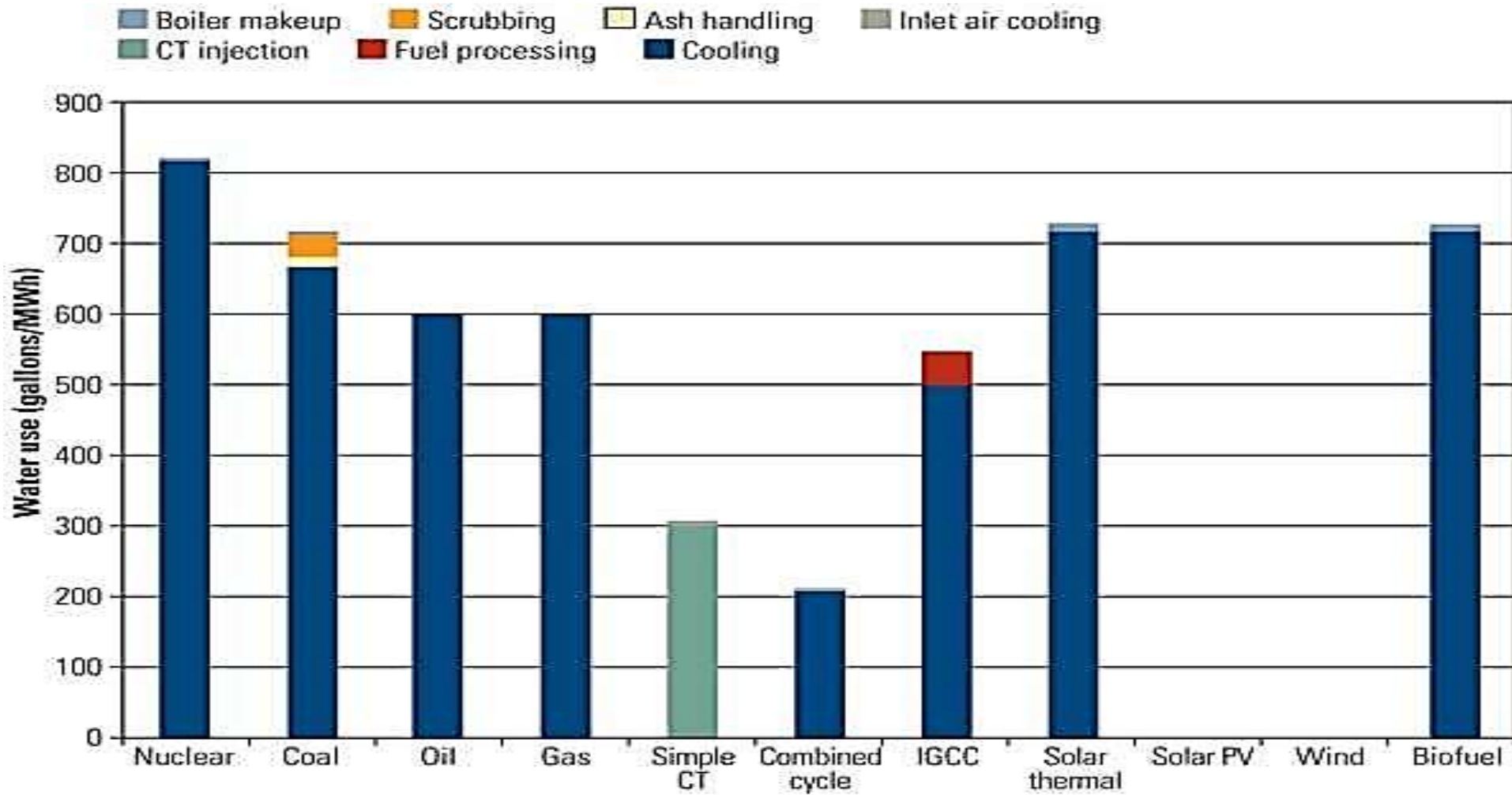


❑ Conventional

- ❖ Steam power plant
- ❖ Nuclear(Atomic) power plant
- ❖ Diesel power plant
- ❖ Gas power plant
- ❖ Hydro electric(Hydel) power plant

❑ Non-conventional

- Solar thermal power plant
- Wind powered generation(aero-generation)
- Wave power plant
- Tidal power plant
- Geothermal power plant
- Bio-mass power plant
- Oceanthermal power plant





WHAT IS A POWER PLANT?

- A **power plant** is a source to harness energy.
- A **power plant** (also referred to as a **generating station, power station, or powerhouse**) is an industrial facility for the generation of electrical energy.
- At the centre of nearly all power plants is a generator, a rotating machine that converts mechanical energy into electrical energy by creating relative motion between a magnetic field and a conductor.
- The energy source harnessed to turn the generator varies widely. It depends chiefly on which fuels are easily available and on the types of technology that the power company has access to.





Steam power plant

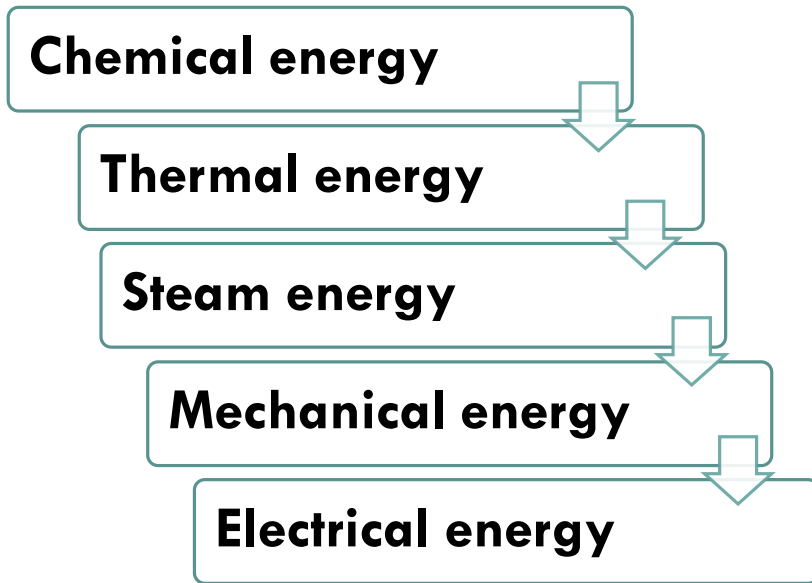
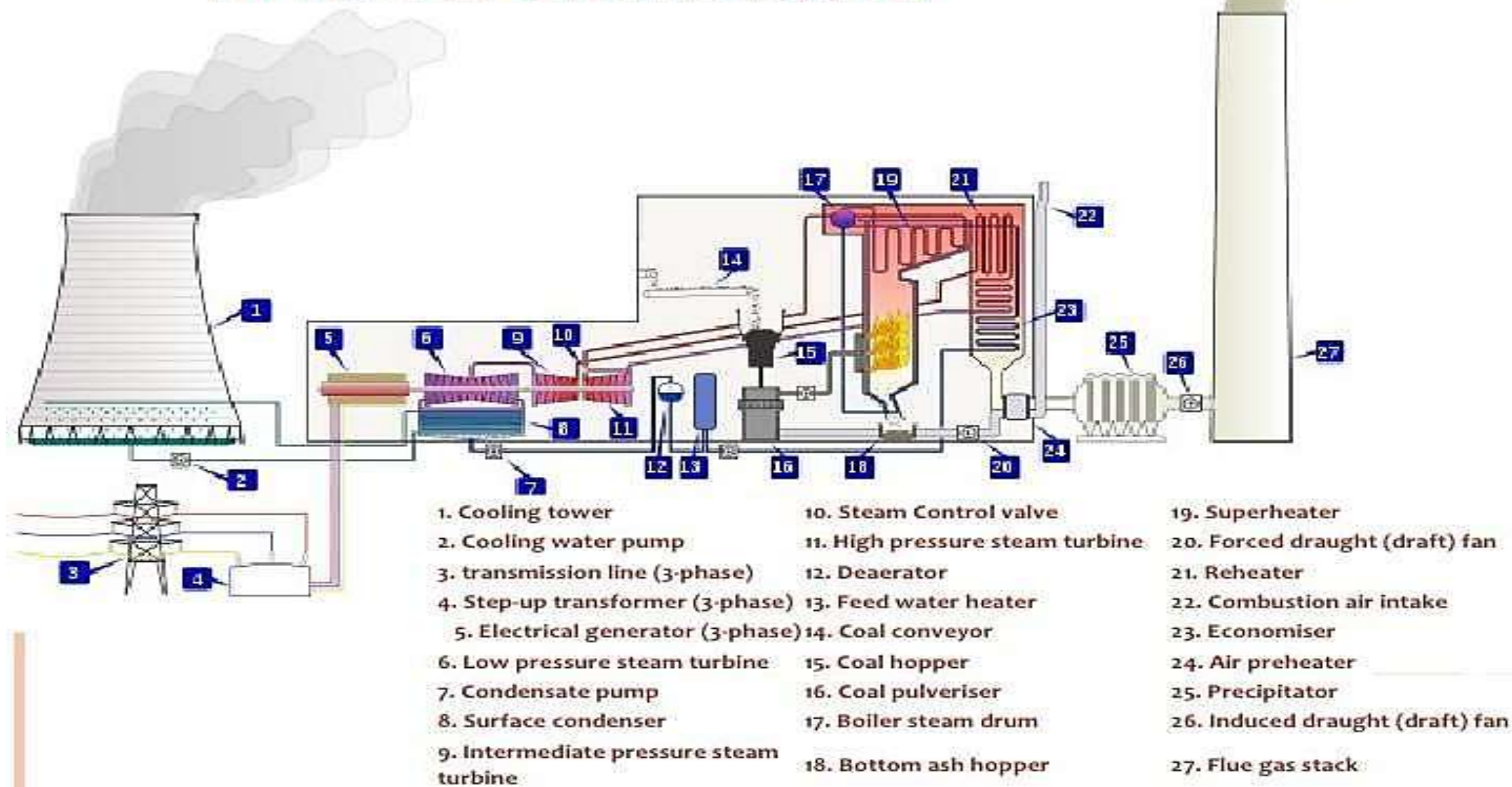


DIAGRAM OF A TYPICAL COAL-FIRED THERMAL POWER STATION





DIAGRAM OF A TYPICAL COAL-FIRED THERMAL POWER STATION



- | | | |
|--|---------------------------------|---------------------------------|
| 1. Cooling tower | 10. Steam Control valve | 19. Superheater |
| 2. Cooling water pump | 11. High pressure steam turbine | 20. Forced draught (draft) fan |
| 3. transmission line (3-phase) | 12. Deaerator | 21. Reheater |
| 4. Step-up transformer (3-phase) | 13. Feed water heater | 22. Combustion air intake |
| 5. Electrical generator (3-phase) | 14. Coal conveyor | 23. Economiser |
| 6. Low pressure steam turbine | 15. Coal hopper | 24. Air preheater |
| 7. Condensate pump | 16. Coal pulveriser | 25. Precipitator |
| 8. Surface condenser | 17. Boiler steam drum | 26. Induced draught (draft) fan |
| 9. Intermediate pressure steam turbine | 18. Bottom ash hopper | 27. Flue gas stack |



Nuclear(Atomic) power plant

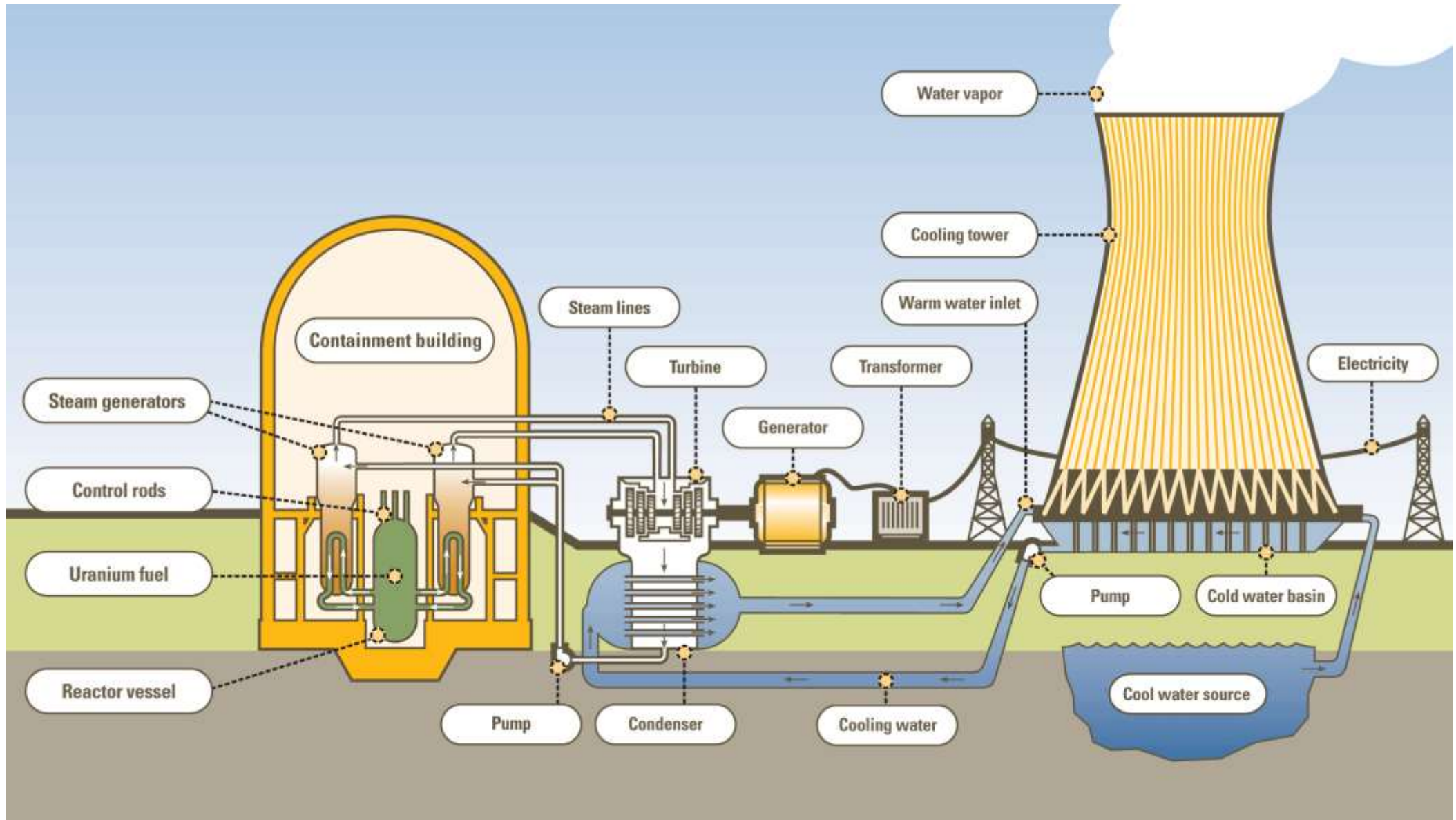
Nuclear energy

Steam energy

Mechanical energy

Electrical energy







Diesel power plant

Chemical energy



Thermal energy



Mechanical energy

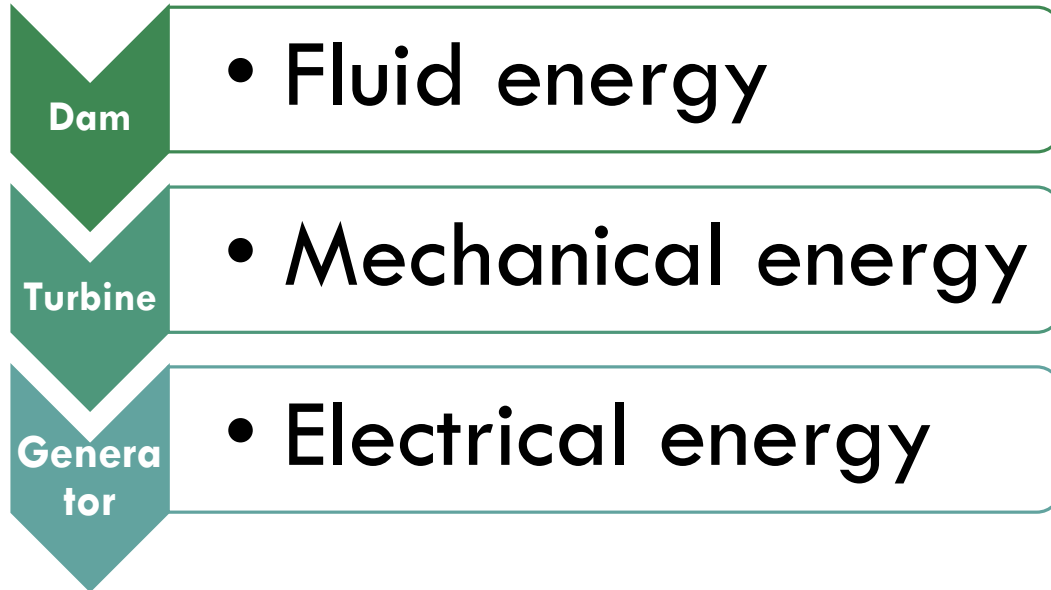


Electrical energy



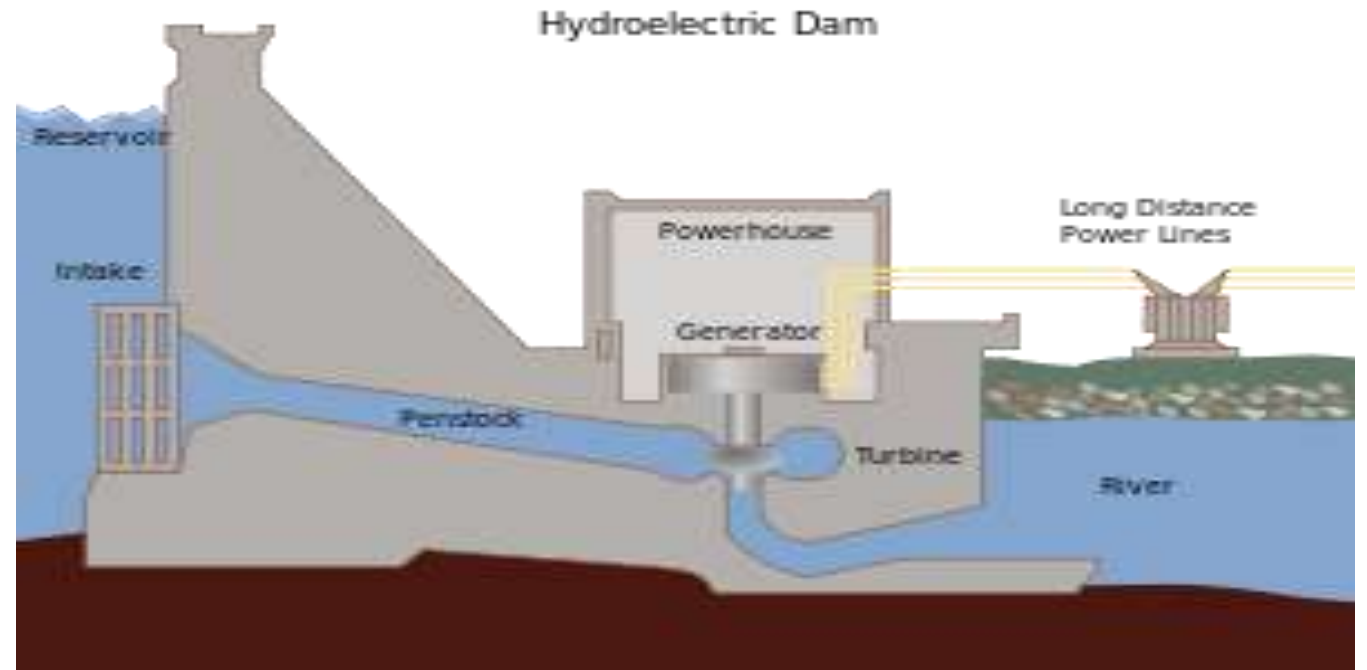
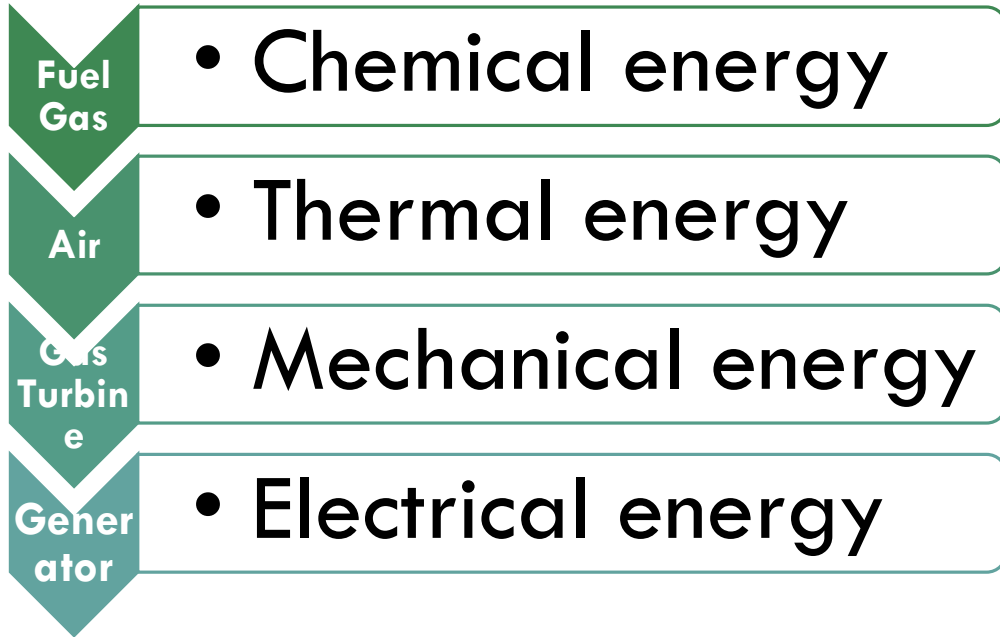


Hydro electric(Hydel) power plant





Gas power plant

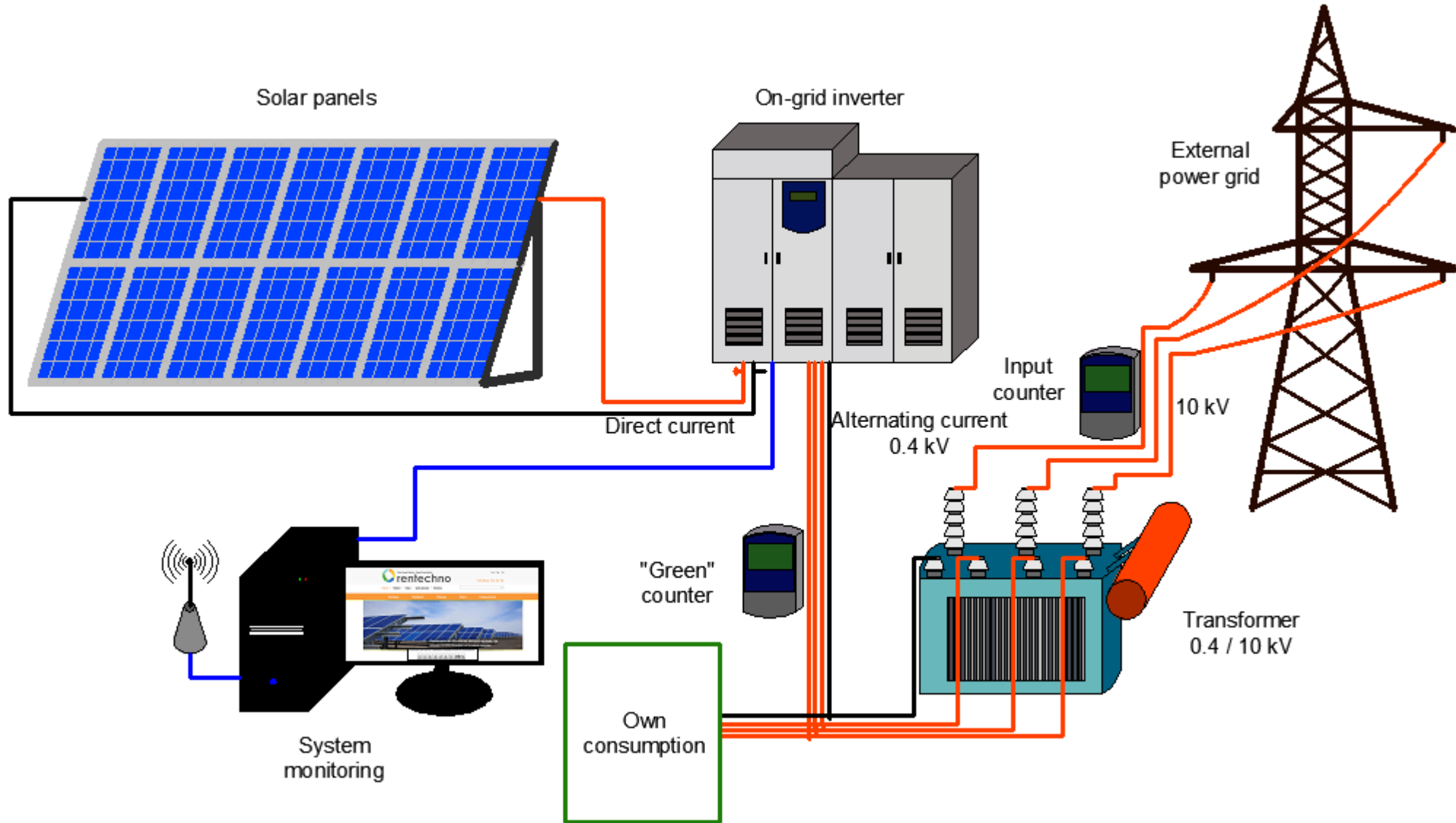


SOLAR POWER PLANT



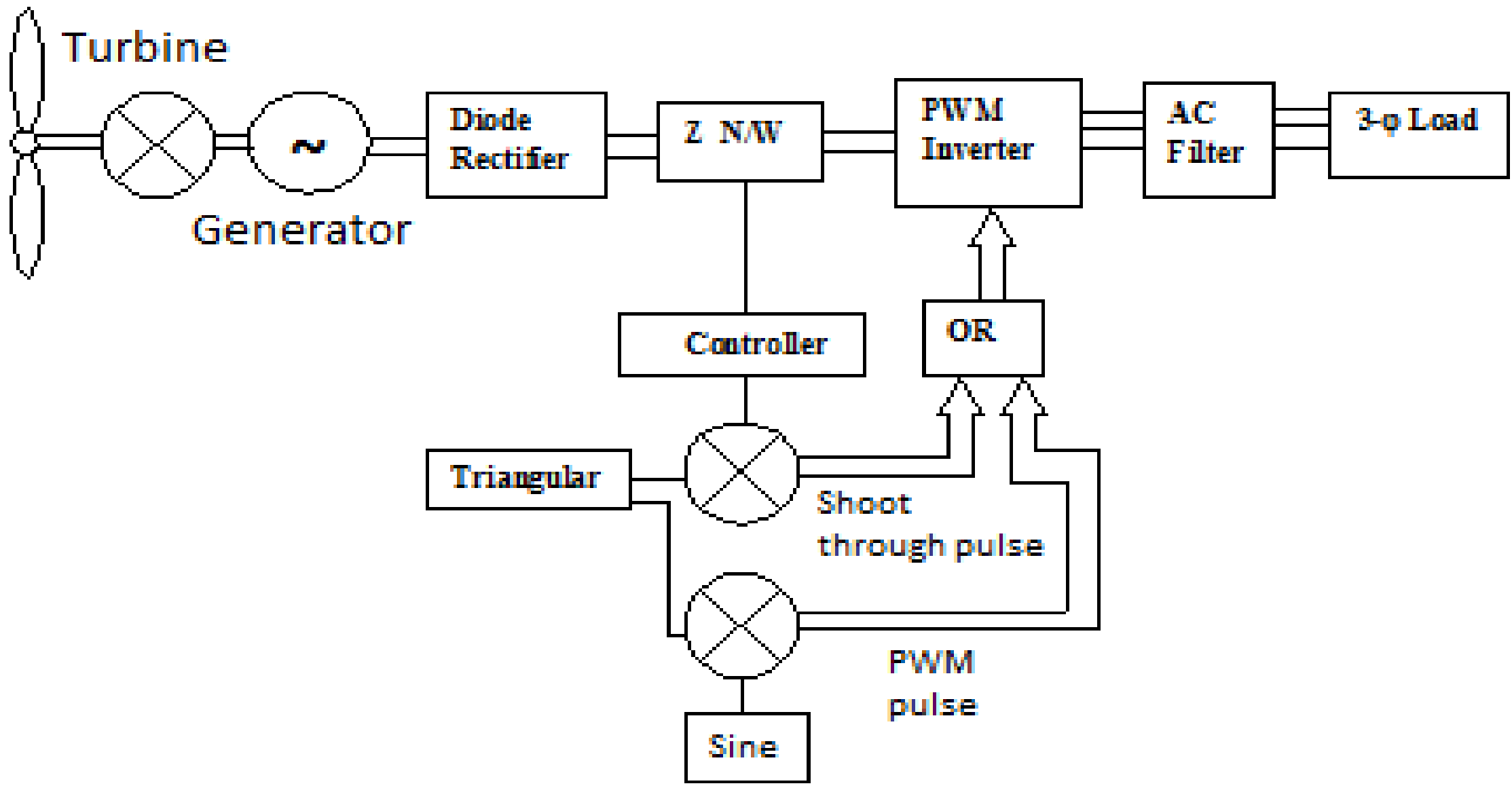


Solar thermal power plant



WIND POWER PLANT







[Types of power plants and how they Generating Electricity? - YouTube](#)

