

ENERGY GENERATION

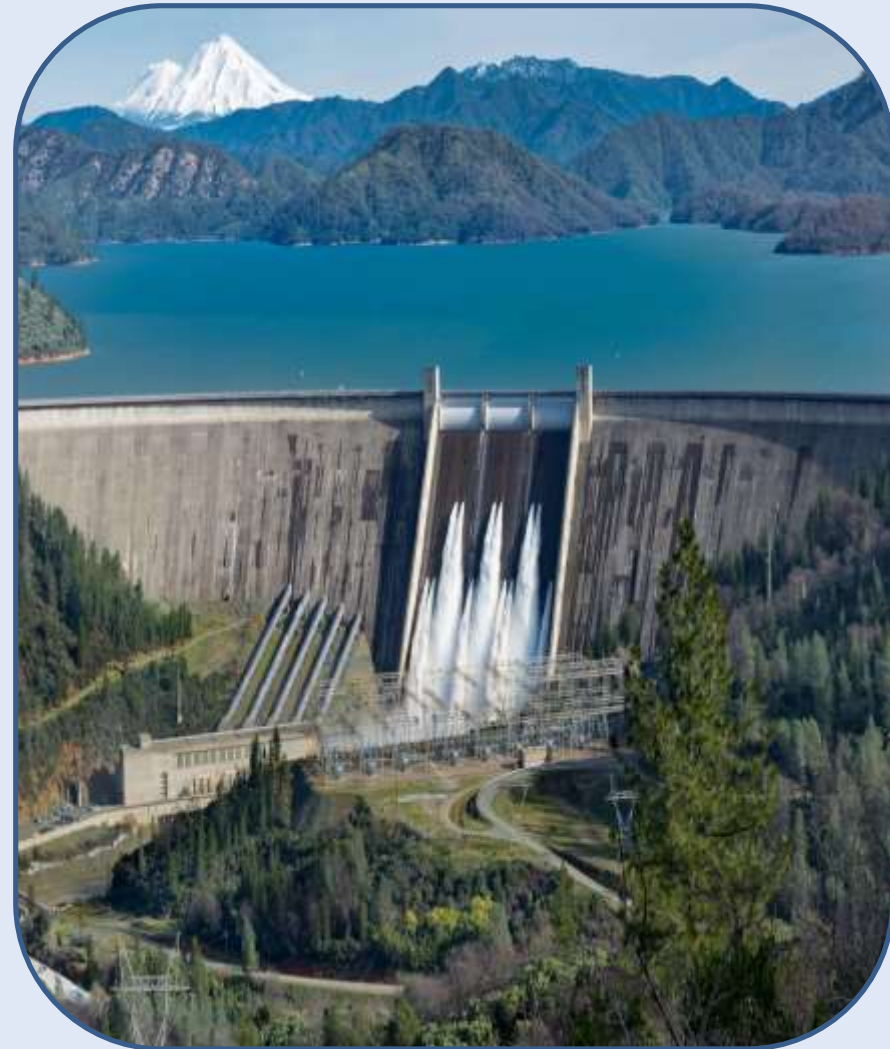
HYDRO, WIND & WAVE



Presented By:- Karan
Roll Number:- 2314118

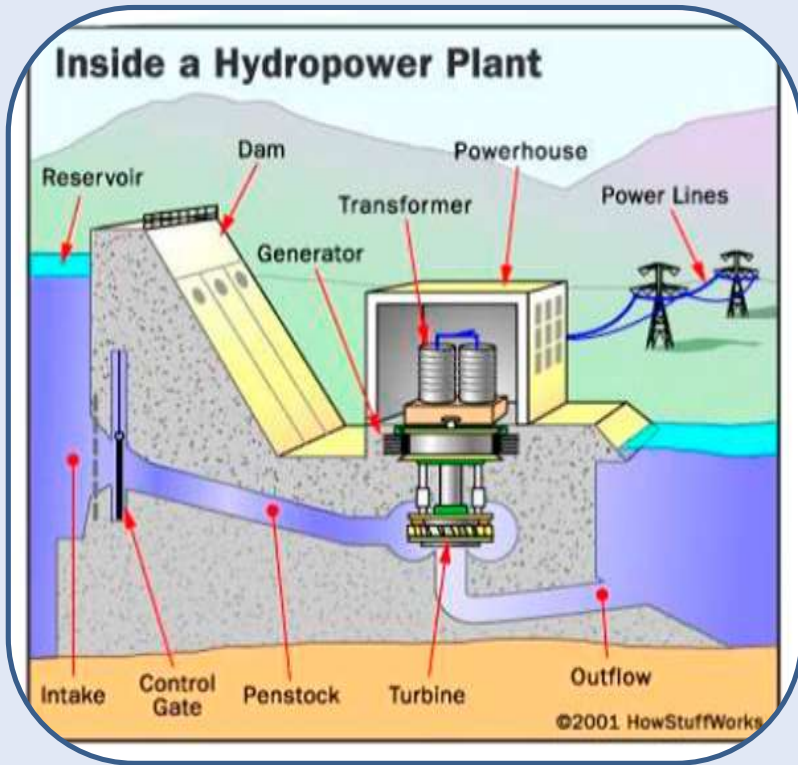
Introduction to Energy Generation

- It is the process of converting the various energy source such as water, wind, nuclear fusion etc. to electric energy is known as “**Energy generation**”.
- Type of Energy Generation to be discuss are as follow:-
 1. Hydro Power Generation.
 2. Windmill Power Generation.
 3. Wave Power Generation

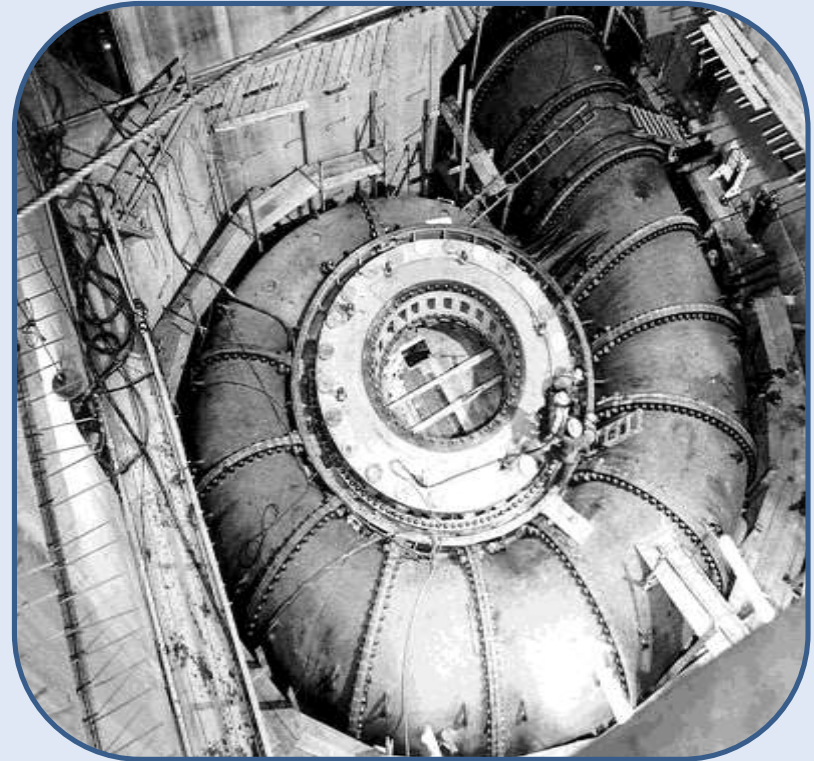


1. HYDRO ELECTRIC ENERGY

- A renewable energy source which generate electricity from the kinetic energy of water flowing is called “**Hydro power or Hydroelectric power**”.



Gravity Dam

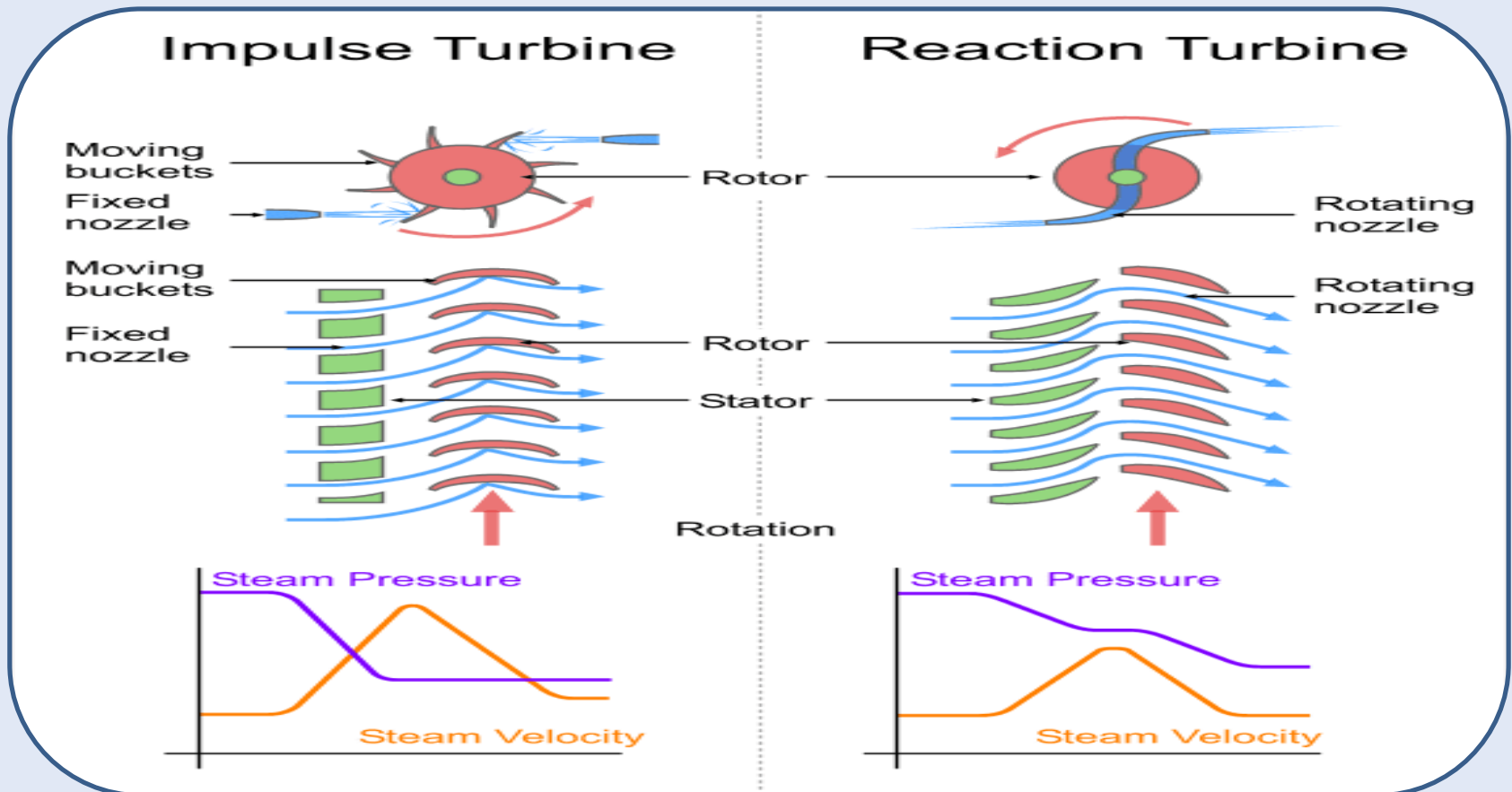


Turbine

Types of Hydro Turbine

A mechanical device that converts the energy of a fluid, like water, steam, or gas, into rotational mechanical energy or electricity is called “**Turbine**”.

Types:- There are two types of turbine:- a.) Impulse Turbine b.) Reaction Turbine



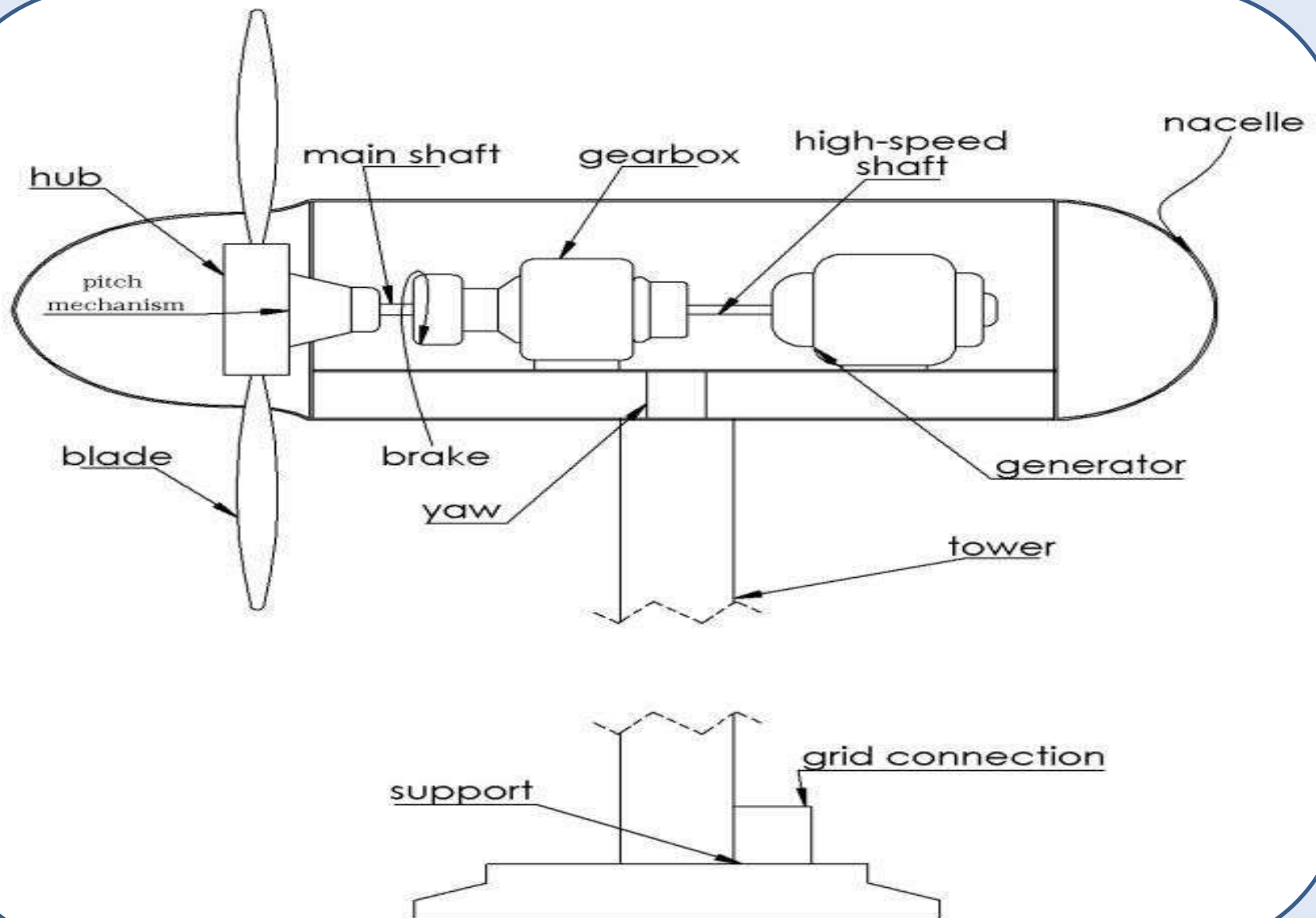
2. WINDMILL ELECTRIC ENERGY

- A form of renewable energy that harnesses the power of the wind to generate electricity is known as. **“Windmill Electric Energy”**.
- **Components of a windmill turbine:-**
 - a) Rotor Blades
 - b) Main Shaft
 - c) Gear Box
 - d) High Speed Shaft
 - e) Generator
 - f) Yaw



WINDMILL

Labelled Diagram of Windmill



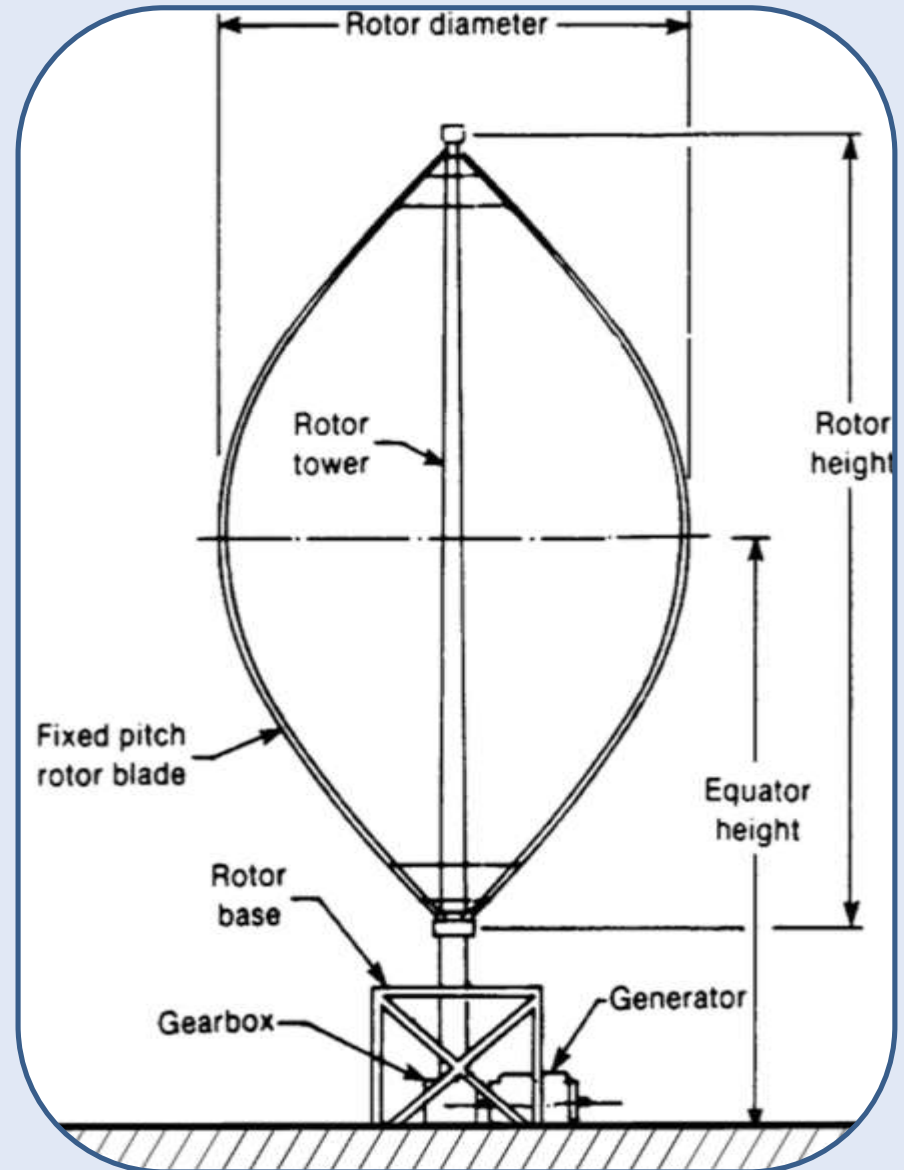
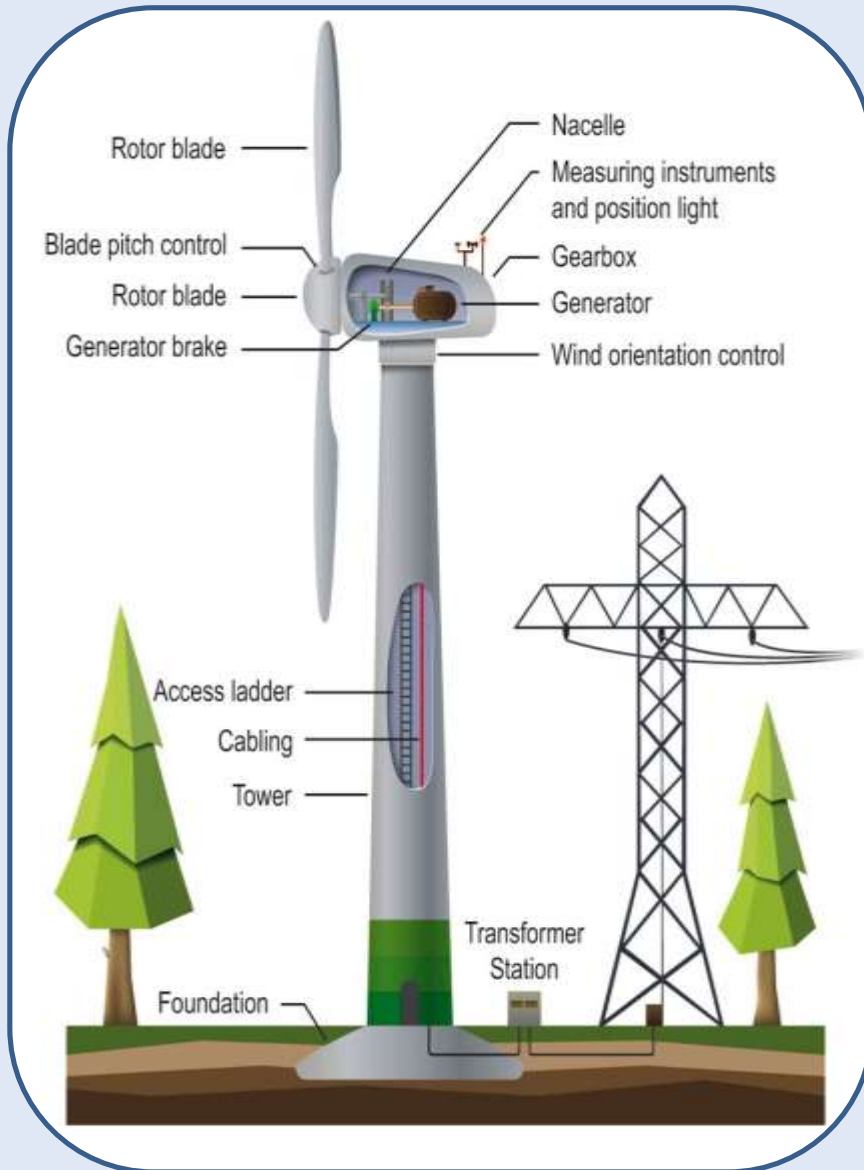
TYPES OF WINDMILL TURBINE

TYPES:- There are 3 type of Windmill Turbine which are as follow:-

1. Horizontal Axis Wind Turbine
2. Vertical Axis Wind Turbine
 - **Darrieus Turbine**
 - **Savonius Turbine**
3. Offshore Wind Turbine



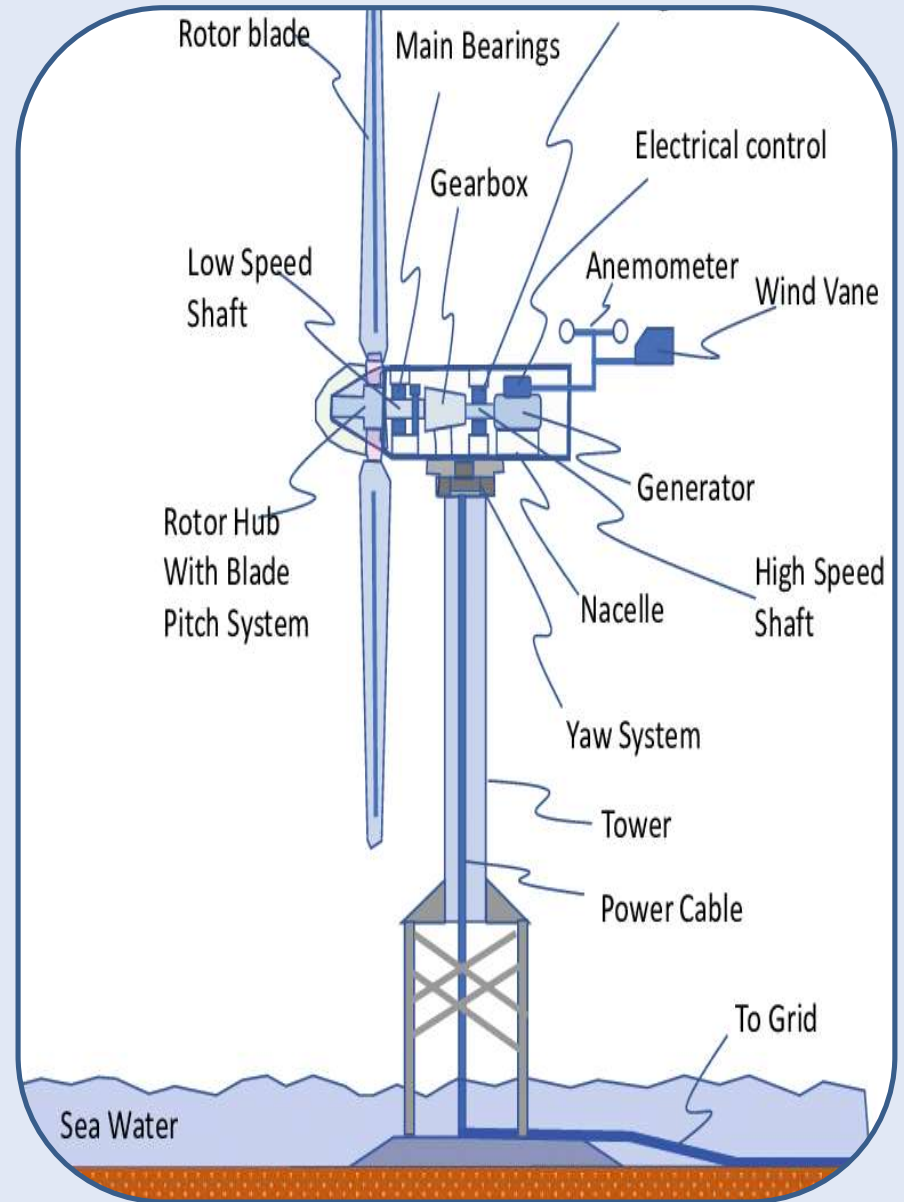
Horizontal and Vertical Axis Wind Turbine



Vertical Axis Wind Turbine



Offshore Wind Turbine



3. Wave Electric Power

- A form of renewable energy that can be utilized from the motion of wave is known as “**Wave Electric Power**”.
- Types of Wave Energy Generation System:-
 - a) Onshore System
 - Oscillating Water Column
 - Overtopping Device
 - b) Near shore System
 - Point Absorber
 - Attenuator
 - c) Offshore System
 - Submerged Pressure Differential



Onshore System

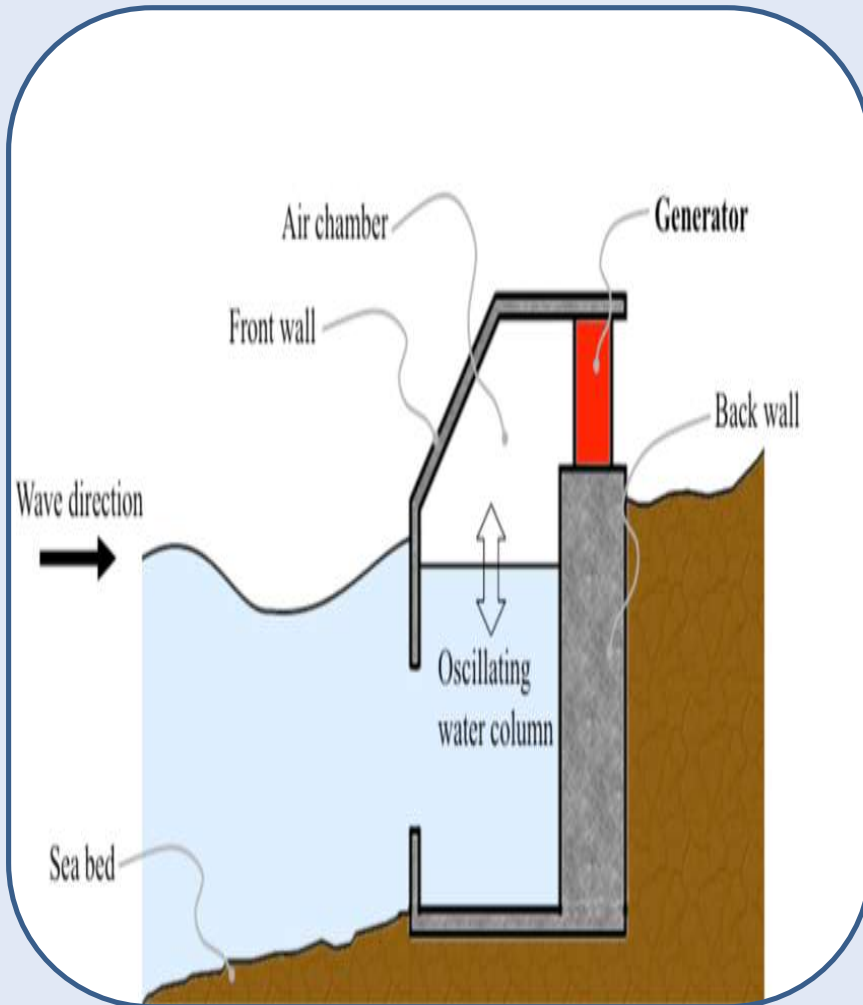


Oscillating Water Column

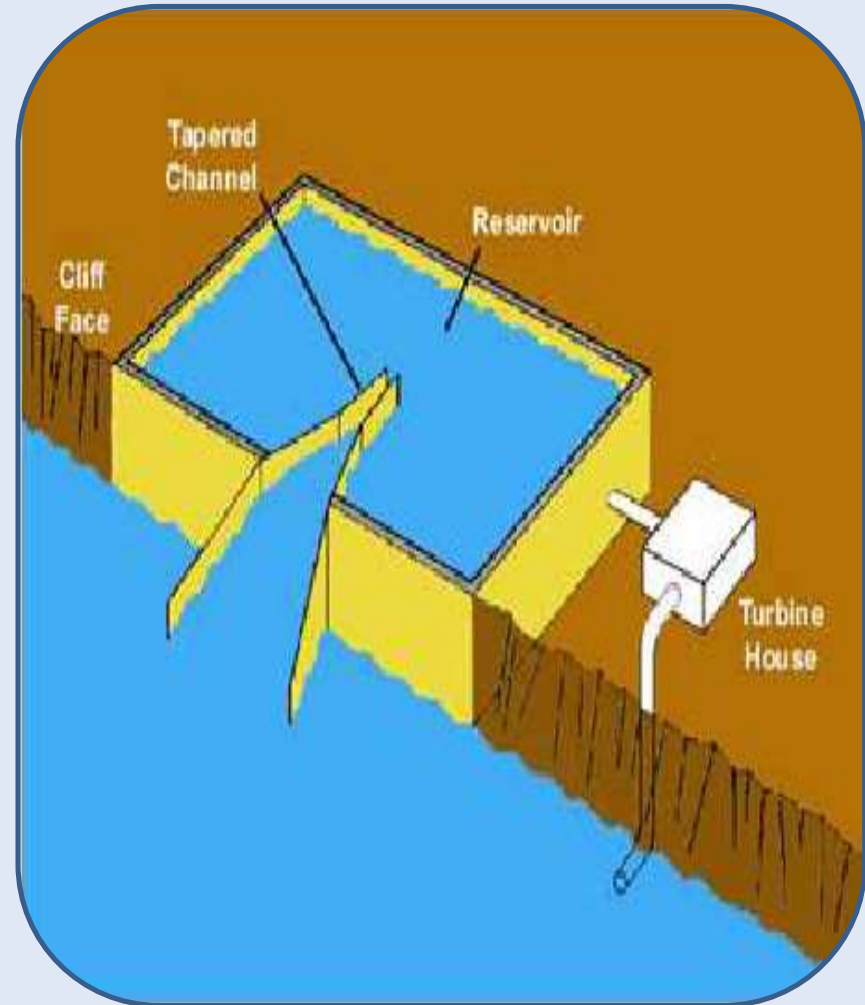


Overtopping Device

Labelled Diagram



Oscillating Water Column



Overtopping Device

Near shore System

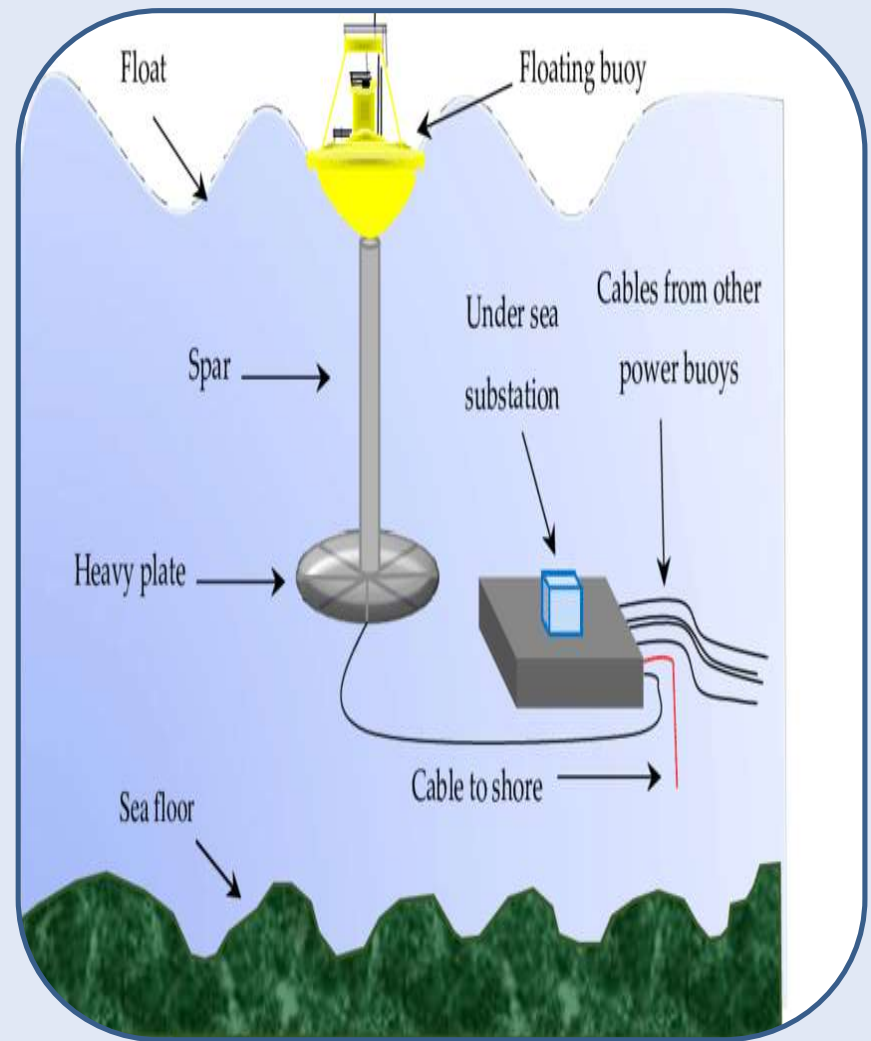
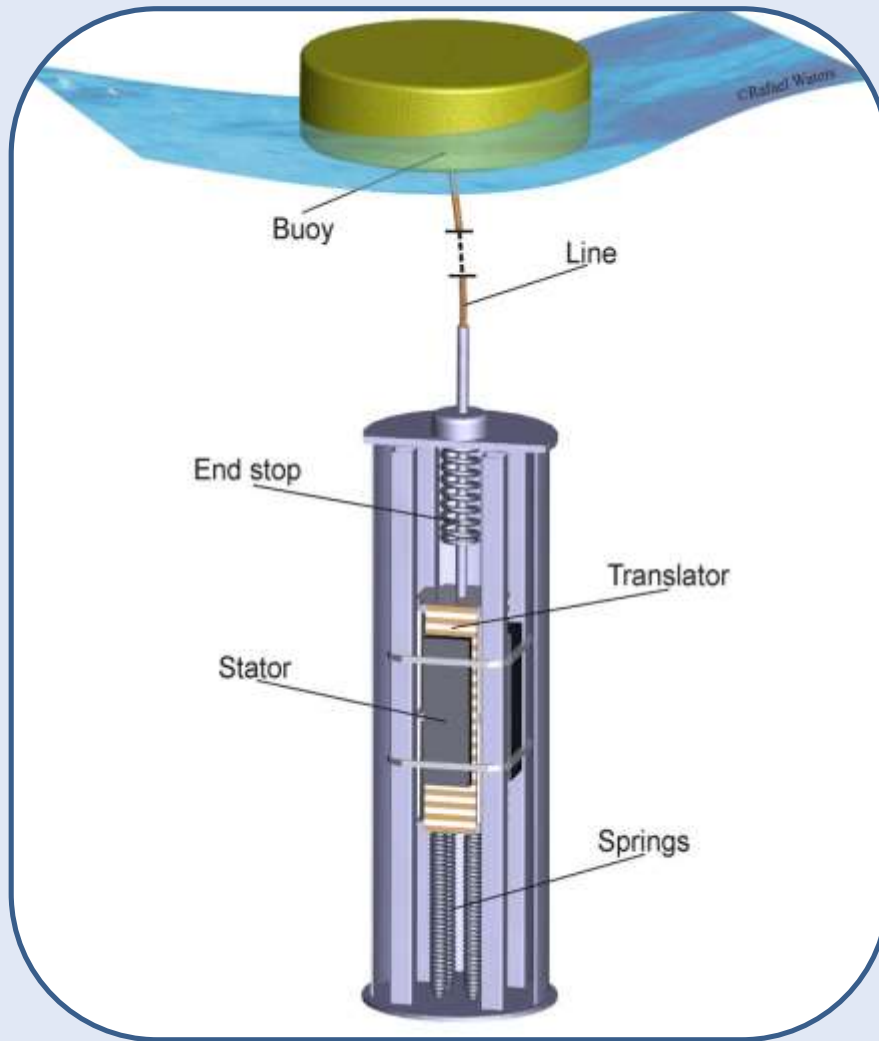


Point Absorber



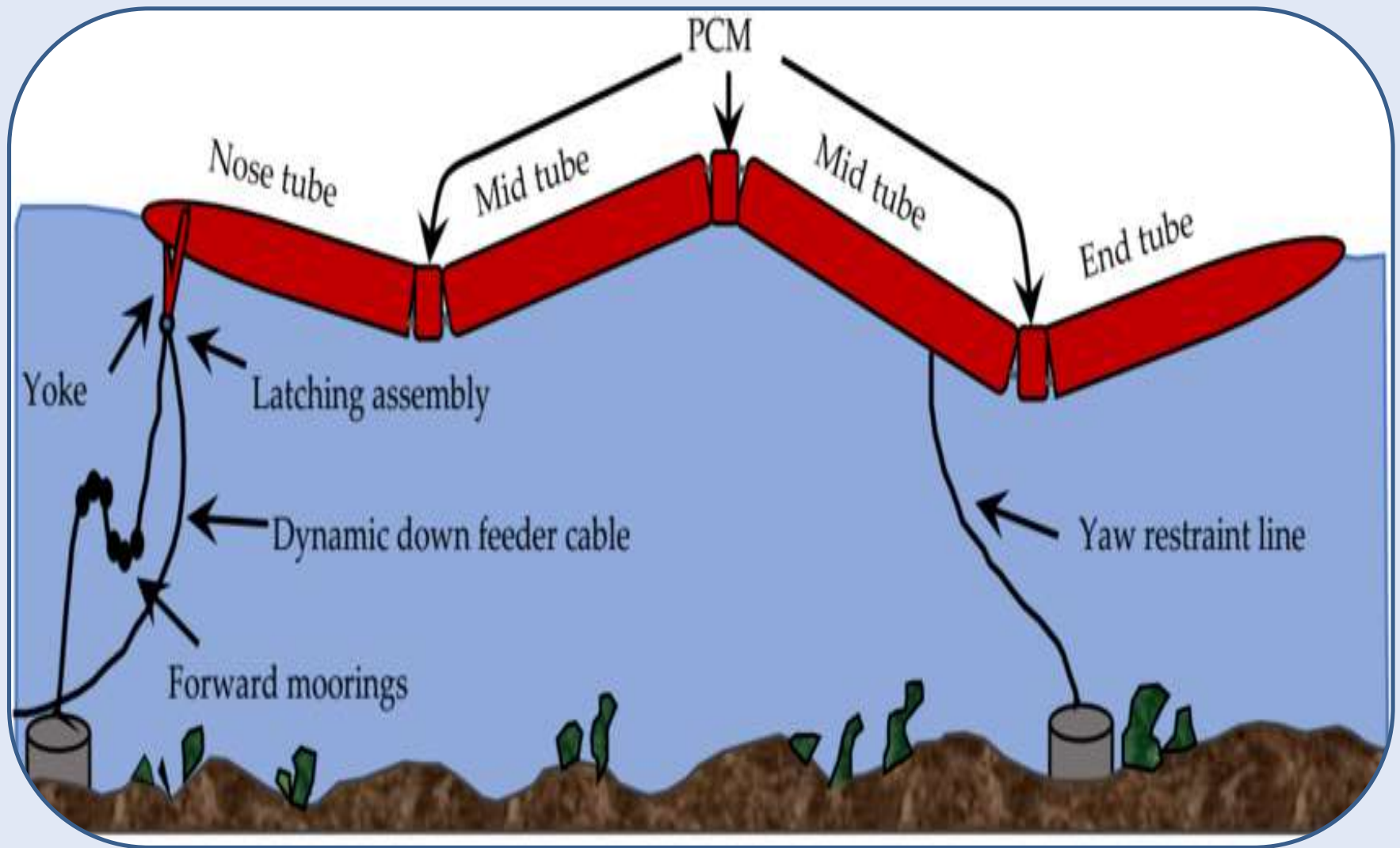
Attenuator

Labelled Diagram

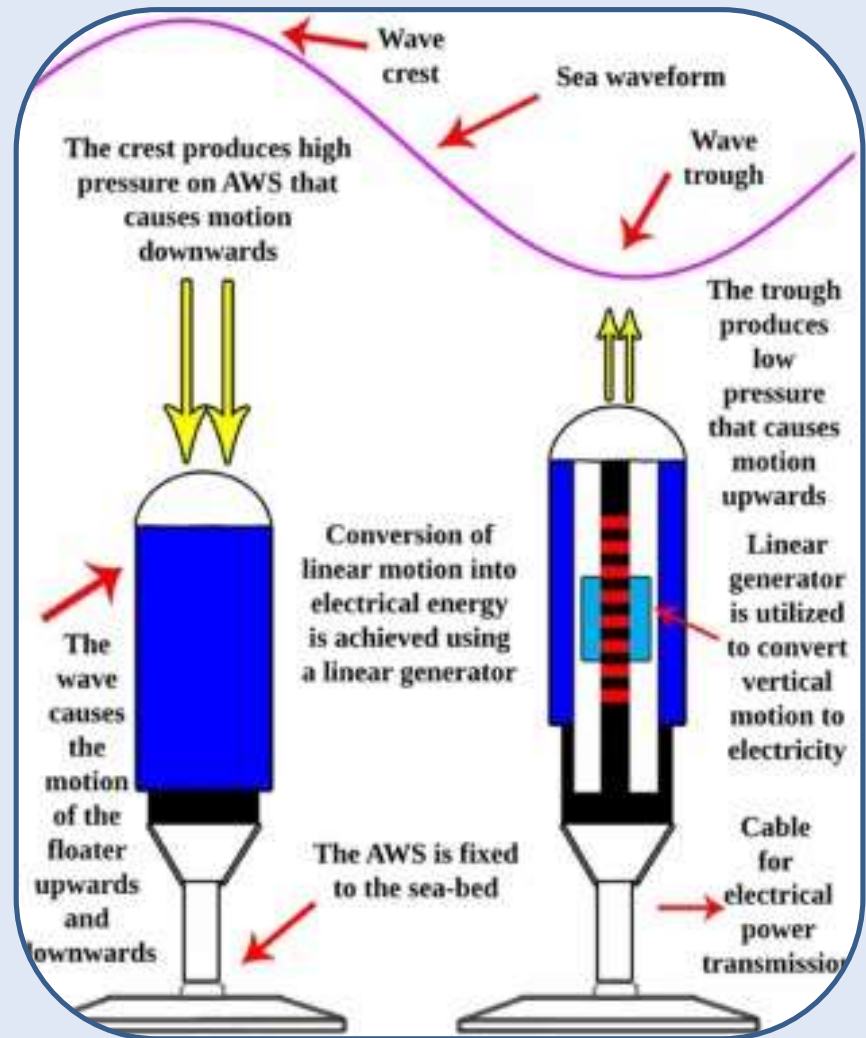


Point Absorber

Labelled Diagram of Attenuator



Offshore System



Submerged Pressure Differential

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THANK YOU