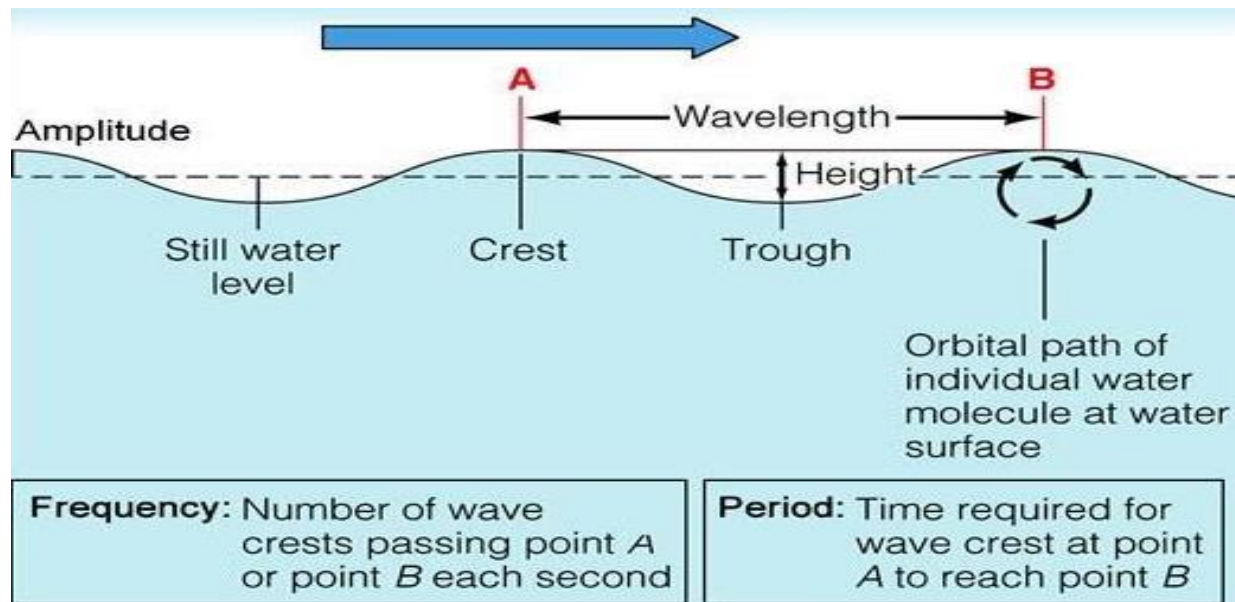


Wave Energy Generator Handout

The Motion of the Ocean Wave

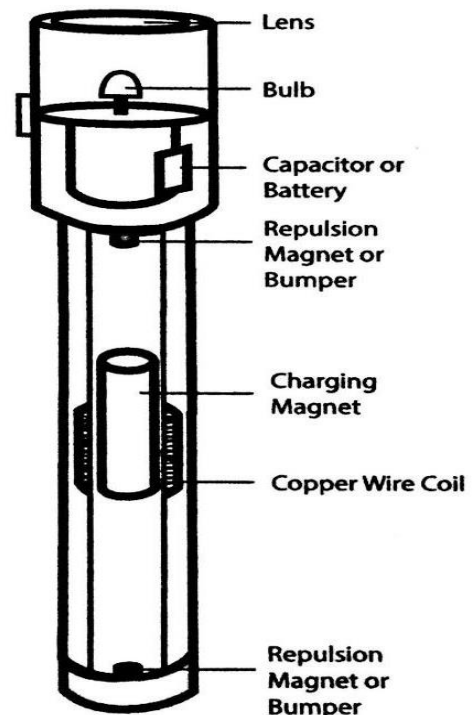
Waves that move through matter (a medium) create areas where the molecules in that matter move closer together and then further apart. Energy is carried in this wave. In the ocean, the medium that the waves of energy travel through is of course water. The water molecules themselves do not move instead they move in a motion that is like a circle.



How a Generator Works

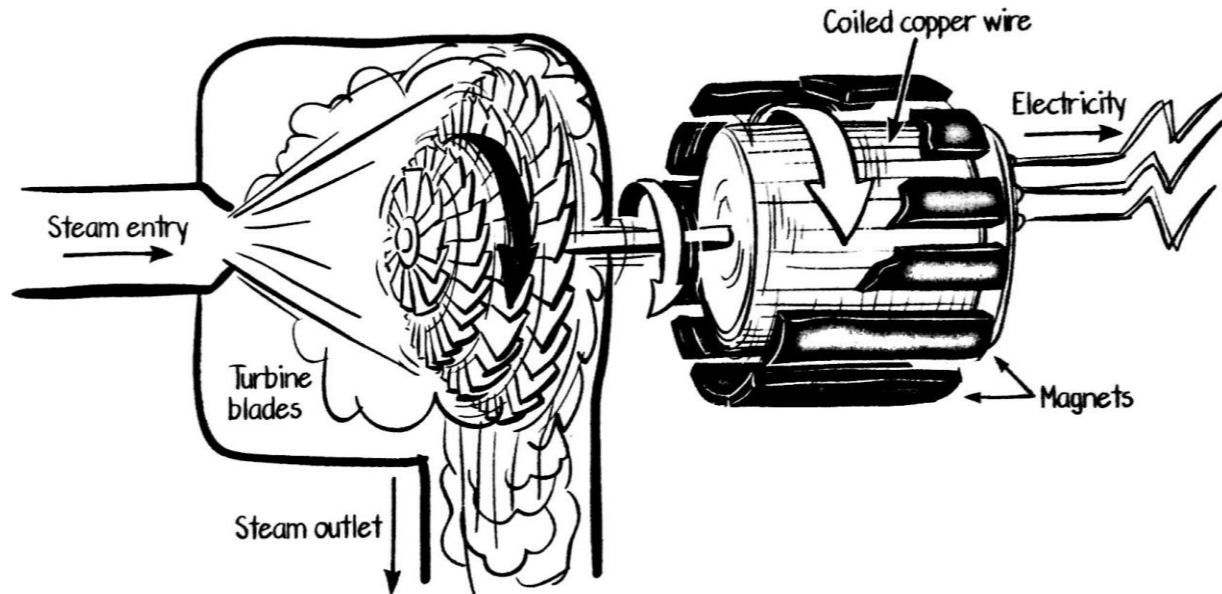
Generators use strong magnets and coils of wire to produce electricity. The electricity is produced when the magnet and the coils of wire move near each other. In most generators the magnets are stationary and do not move but coils of wire are made to move between the poles of the magnets. However, in some generators and other devices such as the flashlight shown in the picture, the coils of wire are stationary and the magnets move past the coils.

Turbines are often used to make the coils of wire or magnets in a generator move in a spinning motion. The turbines can be made to spin by a force such as pressurized steam, moving water, or forceful wind.



Energy Transformation from Heat to Electricity

In the picture below heat is used to make a jet of steam. The steam pushes against the blades of a turbine causing the blades and shaft of the turbine to move in a spinning motion. The spinning shaft of the turbine is connected to the shaft of a generator which spins coils of wire past stationary magnets.



Energy Transformation from Wind to Electricity

In the picture below wind pushes against the blades of a wind turbine causing the shaft of the turbine to move in a spinning motion. The spinning shaft of the wind turbine turns at a slow speed but is connected to a gear box that makes another shaft turn at high speed. The high speed shaft turns the shaft of a generator.

