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Waves & Whistles

:: Fossil fuels such as coal and oil are not renewable over the span of human generations, and their use may be increasingly limited by environmental concerns over global warming and acid rain. To meet the energy needs of a growing world population, engineers in coming decades will be challenged to economically generate power from solar energy sources.



Ocean waves are a tertiary form of solar energy, in that unequal heating of the Earth's surface generates wind, and wind blowing over water generates waves. Despite the fact that nearly 75% of the Earth's surface is covered with water, waves are a largely unexplored source of energy, compared with the progress that has been made in harnessing the sun and wind.

Until recently the commercial use of wave power has been limited to small systems of tens to hundreds of watts aboard generate power . As the buoy heaves up and down in waves, the oscillating water

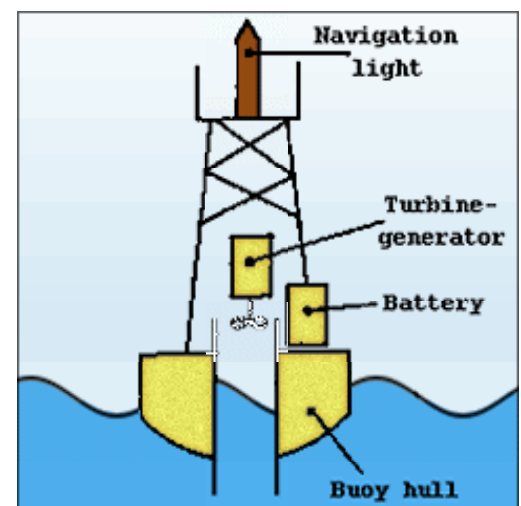


Figure 1

Ocean wave energy conversion for utility scale power generation is now becoming a commercial technology. A 75 kW shore-based demonstration plant by Queens University, Belfast, using the OWC process described above has operated on the Scottish island of Islay for 10 years (Figure 2).

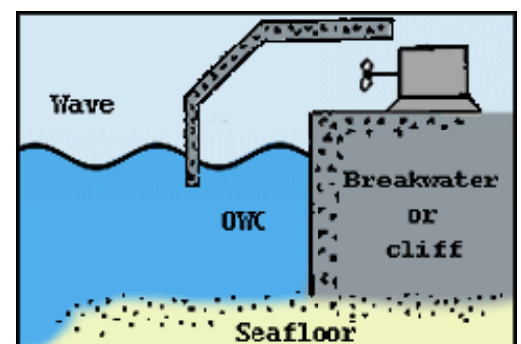


Figure 2

column (OWC) in the centre pipe of the buoy's hull acts like a piston, alternately pushing air out the top of the pipe and drawing it in. This pneumatic power can be converted directly to sound through a foghorn, or indirectly to light by spinning a turbine-generator, which charges an electrical storage battery (Figure 1)

The output of this plant has allowed significant research and technical development to take place.

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