

EXAMEN : baccalauréat Général – Série S –SVT ou S-SI	SESSION 2014
EPREUVE : Evaluation spécifique de Langue en section européenne	
PHYSIQUE – CHIMIE en langue ANGLAISE	
THEME : Energie : les enjeux énergétiques	Sujet n°06

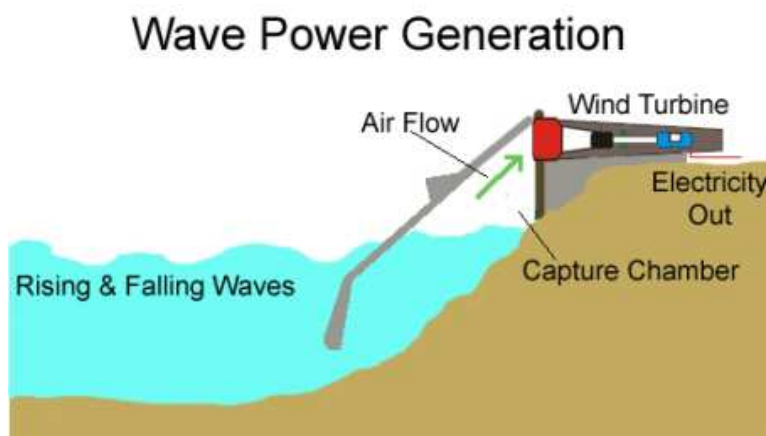
Using wave power to generate electricity...

Wave energy is one of the ways to generate electricity today. Waves form through the current of winds that blow on the ocean, and these winds are created by differences in air pressure created by solar energy (...).

Although there are many ways in which wave energy can be used to generate electricity, an **oscillating water column (OWC)** is one of the commonly used methods today.

An OWC is built next to a shore, with a **wave capture chamber** that is used to trap the air and the water of the surface below the walls of the chamber.

The waves arriving cause the water in the chamber to rise and fall, which means that air is forced in and out of the hole in the top of the chamber. We place a turbine in this hole, which is turned by the air rushing in and out. This turbine rotates in the same direction regardless of the direction of the air flow generating power whether waves have just entered or left the chamber.



The potential worldwide usable energy that could be extracted from waves has been estimated at two terawatts, equivalent to the current worldwide installed capacity for electricity generation. Only a tiny fraction of this is currently being used.

<http://caphysics12011.wikispaces.com/8.4.21+Wave> - <http://www.darvill.clara.net/altenerg/wave.htm>
<http://www.australianethical.com.au/news/investment-profile-carnegie-wave-energy>
http://www.gametobegreen.com.au/help/opportunity_wave.php

Questions :

1. Present and comment on this document.
2. Do not forget to focus on the types of energies involved in the OWC process and the conversion between them.
3. What do you think of this method to generate electricity (pros and cons) and why is it necessary to develop renewable energies ?