

EXAMEN : Baccalauréat général - Série S-SVT ou S-SI	Session 2013
ÉPREUVE : Evaluation spécifique de Langue en section européenne	
PHYSIQUE-CHIMIE en langue ANGLAISE	
Thème : « Enjeux énergétiques »	Sujet n° 9

Floating Wind Turbines Set to Conquer Deep Ocean

Turbine makers are building giant machines that must withstand powerful storms in the inhospitable waters of the North Sea -- but they will also need to spend money on robust foundations, specialized installations and ships that can hold the turbines to the ocean floor at depths of 115 feet.

But what if such turbines with rotors that sweep three football fields could just be towed out to sea and simply attached to the bottom of the ocean at virtually any depth, kept steady amid the waves by a flotation device? As far-fetched as it may sound, giant floating wind turbines will make their own niche in the offshore wind sector if they can provide access to locations with excellent wind conditions at cheaper prices, industry experts say.



The floating technology allows turbines to be located in previously inaccessible locations where water depth exceeds 50 meters and wind resources are superior. Once in place, the platform is anchored with four lines, two of which are connected to the column stabilizing the turbine, thus increasing stability and reducing motion (...). As the wind shifts direction and changes the loads on the turbine and foundation, pumps will shift ballast water between foundation chambers. (...)

"Deep offshore wind technology will allow us to harness stronger and more stable winds and in the medium term deliver sustainable energy into our electrical system."

From Scientific American , january 2012.

- 1.a. Present and comment on the document.
- 1.b. Do you think floating wind turbines present only advantages?
2. According to you, why are scientists and industrials looking for new ways of producing energy?