

# BREVET DE TECHNICIEN SUPÉRIEUR ÉLECTROTECHNIQUE

**ANGLAIS**

**Durée : 2 heures**

**Coefficient : 1**

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**B.T.S. ÉLECTROTECHNIQUE**

Session 2007

Épreuve → **Anglais**

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## First power station to harness Moon opens

The first commercial subsea power station to harness the tidal currents of the open sea was hooked up to an electricity grid on Saturday.

The rise and fall of the sea, caused by the Moon's gravitational tug on the Earth, could be generating electricity for hundreds of thousands of homes within five years if the new Norwegian power station proves successful.

The power station, which resembles an underwater windmill, began generating electricity for the town of Hammerfest. Although still largely a prototype, the generator is the first in the world to harness the power of the open sea and be connected to an electricity grid.

The few large-scale underwater generators in operation use artificially channelled water, which can cause environmental problems in shallow estuaries.

The new tidal mill produces 300-kilowatts of electricity - enough to power 30 Norwegian houses or 60 to 80 British homes. Its designers hope to begin mass producing the devices within two years.

"Within a year we will have learnt enough to build a second generation device", says Bjorn Bekken, project manager for Hammerfest Stroem, the company that built the device. "I hope to see underwater energy farms within five years."

Professor Ian Fells, of the University of Newcastle, says that tidal power has "enormous potential" despite costing more than wind power, another renewable resource.

"There's still a lot of hard engineering required before the costs will come down but we are going to need all of the renewables and nuclear power we can get our hands on if we are going to meet our Kyoto commitments," he told **New Scientist**.

### Near continuous source

The device harnesses the tidal energy of the sea in the same way windmills tap into the power of air currents. The generator consists of ten metre diameter blades which rotate as water passes over them. These in turn drive a generator to produce electricity. The whole mechanism is held aloft by a 20 metre steel column anchored to the seabed.

If the first generation device proves successful, the company envisages installing up to 20 tidal mills off the coast of Hammerfest. After that they hope to begin mass producing them for the international market.

[...]

Tidal energy has one key advantage over other renewable forms of power - it has the potential to provide a near continuous source of power 24 hours a day. Wave, wind and solar power all fluctuate throughout the day. By contrast, the tide flows continuously in one direction for just over six hours before pausing briefly and then reversing.

This means that tidal power has the potential to make a significant contribution to the baseload - the minimum amount of electricity needed by a country and usually provided by coal and nuclear power plants.

[www.newscientist.com](http://www.newscientist.com)

22 September 2003, Danny Penman.

## TRAVAIL À FAIRE

### I - COMPTE-RENDU (12 points)

Vous rédigerez **en français** un compte-rendu (200 mots  $\pm$  20 %) clair, pertinent et utilisable du document proposé. Vous veillerez plus particulièrement à dégager les éléments essentiels dans une langue de qualité et indiquerez le nombre de mots utilisés.

### II - TRADUCTION (8 points)

Traduisez **en français** le passage encadré de la ligne 6, "*The power station...*" à la ligne 10 "... *in shallow estuaries.*".