



<http://www.darvill.clara.net/altenerg/>

### 1. Introduction

Explain what a tide is: \_\_\_\_\_ it is caused by the pull of the moon. It makes the sea water move twice a day (marée)\_\_\_\_\_

Can you built a tidal station power anywhere in the world? \_\_\_\_\_no, there are only around 20 sites in the world that have been identified as possible tidal power stations.\_\_\_\_

### 1. How it works

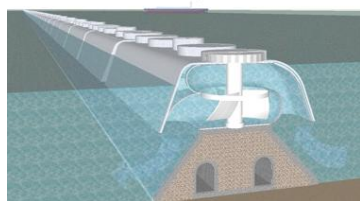
#### Tidal barrage



A huge dam (called a barrage) is built across a river estuary (estuaire) tide goes in and out, the water flows through tunnels in the dam.

The ebb and flow of the tides (le flux et le reflux) can be used to turn a turbine, or it can be used to push air through a pipe, which then turns a turbine. Large lock gates (portes de l'écluse) allow ships to pass.

a major drawback of tidal power stations is that they can only generate when the tide is flowing in or out. However, tides are totally predictable, so we can plan to have other power stations generating at those times when the tidal station is out of action.



A tidal reef is looks like a tidal barrage at first glance but its design dos not block the water movement as much.

#### Offshore turbines



It is like an underwater wind farm.

They have the advantage of being much cheaper to build, and does not have the environmental impacts that a tidal barrage would bring.



They can be vertical axis or horizontal axis.

## 2. Advantages and disadvantages

# Correction

Advantages:	Disadvantages:
<ul style="list-style-type: none"> <li>• Once you've built it, tidal power is free.</li> <li>• It produces no greenhouse gases or other waste.</li> <li>• It needs no fuel.</li> <li>• It produces electricity reliably.</li> <li>• Not expensive to maintain.</li> <li>• Tides are totally predictable.</li> <li>• Offshore turbines and vertical-axis turbines are not ruinously expensive to build and do not have a large environmental impact.</li> </ul>	<ul style="list-style-type: none"> <li>- A barrage across an estuary is very expensive to build, and affects a very wide area - the environment is changed for many miles upstream and downstream. Many birds rely on the tide uncovering the mud flats so that they can feed. Fish can't migrate, unless "fish ladders" are installed.</li> <li>- Only provides power for around 10 hours each day, when the tide is actually moving in or out.</li> <li>- There are few suitable sites for tidal barrages</li> </ul>

## 2. Summary

- Tidal Power is renewable
- Doesn't cause pollution, doesn't need fuel
- A tidal barrage is very expensive to build
- Only works when tide is going in or out
- A tidal barrage affects a large area
- There are very few places that you could sensibly build a Tidal barrage
- Underwater turbines may be a better bet than a barrage - they are cheaper and don't have the huge environmental impact.

## Quiz:

There is a great deal of energy in tides. To use it, we can build a large dam, called a tidal **barrage**, across an **estuary** where the tides are strong. There are proposals to build one across the river **Severn** in the UK.

Tidal energy is **renewable**, needs no **fuel** and produces no **pollution**. However, such a huge dam is very **expensive** to build and will affect the environment over a **large** area. The largest one in the world so far is in the Rance estuary, in **France**.

An alternative is 'offshore **turbines**', like an underwater wind farm. This will not have such a dramatic effect on the surrounding area.

It will only generate power when the tide is going **in** or **out**, but we know when this will be so we can easily plan for it.