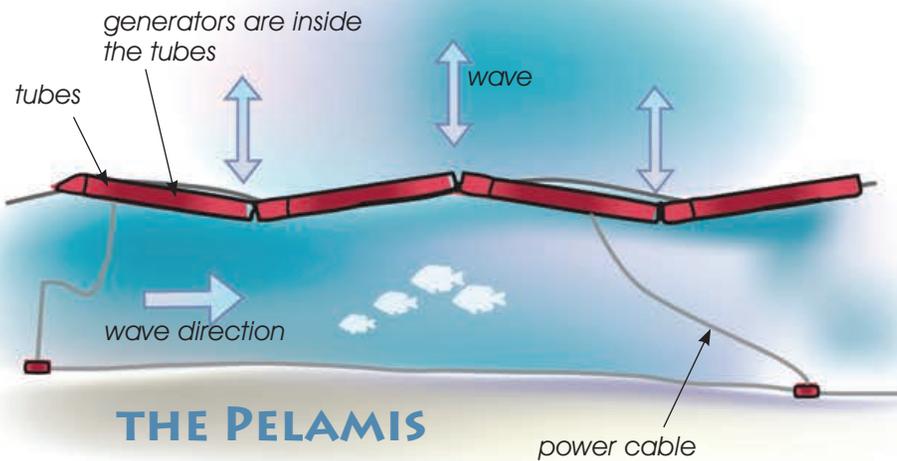




# WAVE ENERGY - FACT SHEET 10 SIDE A

Wave energy is energy from waves caused by the wind blowing across the sea.

Waves can be very large and powerful with lots of energy, or the sea can be calm with no waves at all. Wave energy depends on the **weather** conditions each day. Wave energy technology is **new** and still **being developed** and tested. Two types of wave energy machines are being tested in Scotland.



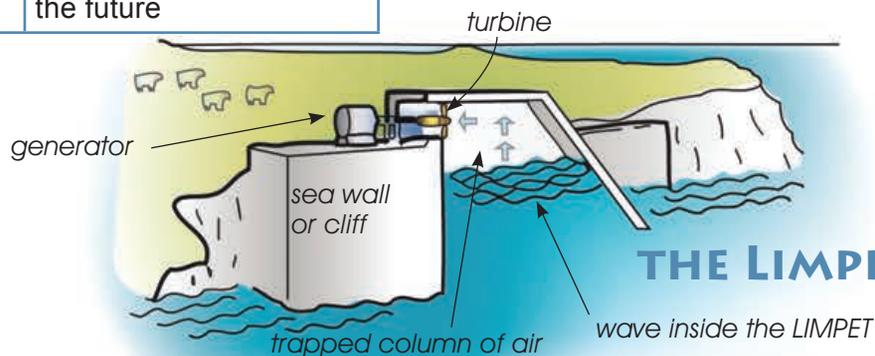
**THE PELAMIS**

- ◆ **Pelamis** is made of four giant metal tubes with movable joints
- ◆ The action of the waves causes the tubes to move up and down
- ◆ As the joints move, oil is forced through generators
- ◆ The generators produce electricity as they spin

## WAVE ENERGY FACTS

How many wave energy generating stations are there in the UK?	2 (both in the Highlands and Islands of Scotland)
What does LIMPET mean?	Land Installed Marine Powered Energy Transformer
Which areas of the UK have the best waves for producing wave energy?	Scotland and Cornwall
How long is the Pelamis?	120 metres
What is Pelamis made from?	Steel
What is the LIMPET made from?	Concrete
How much of the UK's electricity is supplied by wave energy at the moment?	Very, very little, but there are real possibilities for the future

- ◆ The **Limpet** is built into the shore, and has strong walls
- ◆ Incoming waves push against a column of air, which is trapped inside the machine
- ◆ The air is forced upwards where it pushes a turbine, making it turn very fast
- ◆ As the wave retreats, air is sucked back through the turbine causing it to spin again
- ◆ The turbine works a generator, which makes electricity as it turns



**THE LIMPET**



photo courtesy of Wavegen



The LIMPET wave energy machine is on the island of Islay, off the west coast of Scotland. It started generating power for the islanders in 2000 and supplies power to about 350 homes. It was the World's first commercial wave energy machine.



Photo HIE

The Pelamis wave energy machine on its way to the European Marine Energy Centre (EMEC) in Billia Croo Bay, Orkney. It started generating power in 2004.



## ADVANTAGES OF WAVE ENERGY

- ◆ Wave energy is renewable, it will never run out.
- ◆ Wave energy is clean and produces no polluting chemicals or greenhouse gases.
- ◆ Once a land based wave energy power station is built it is not expensive to operate and run.
- ◆ The wave energy machines are low-lying and do not spoil landscapes.
- ◆ The UK has lots of coastline and powerful waves from the Atlantic Ocean.



## DISADVANTAGES OF WAVE ENERGY

- ◆ Suitable sites for wave energy are limited to windy coastal areas.
- ◆ Wave energy is unpredictable as it depends on the weather – sometimes there will be lots of energy, at other times almost none.
- ◆ Wave energy can be noisy (but so are waves!)
- ◆ Storms at sea are very powerful and can damage the machines.
- ◆ Rust, seaweed and barnacles can also damage the machines.