

## 1 Wave power

Start here

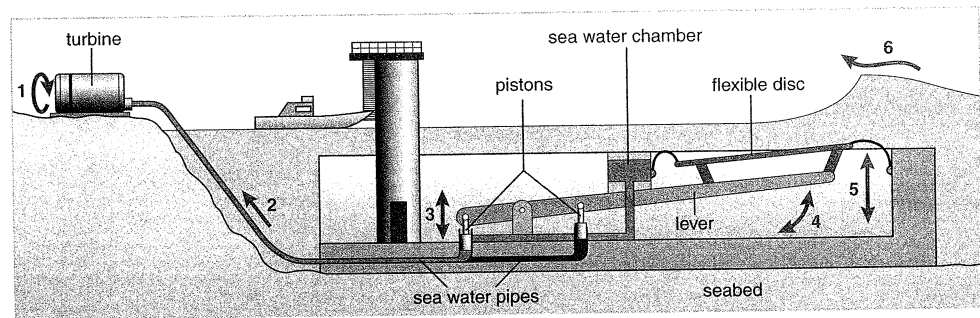
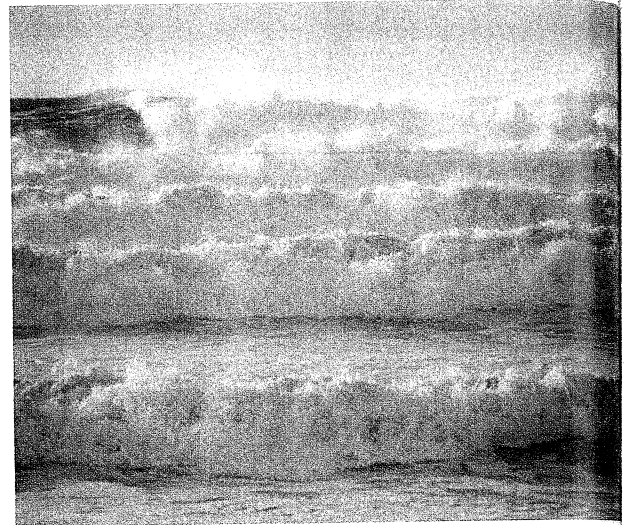
- 1 Brainstorm in small groups. Make notes or draw simple diagrams.

*How can the energy of sea waves be converted into electrical power?*

Task

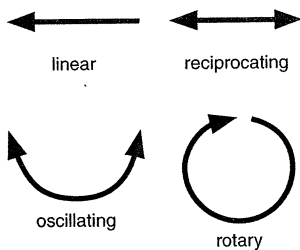
- 2 Study this diagram. It shows one method of converting wave energy into electrical power. With your group

- decide how it works
- explain your group's ideas to the rest of the class

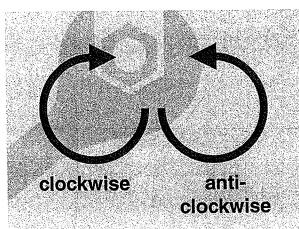


### Vocabulary

- 3 Complete this text with the correct motion words.



There are four basic motions. First, there is (1) \_\_\_\_\_ motion. This is movement in a straight line, and in one direction. Secondly, there is (2) \_\_\_\_\_ motion, which is two-way movement backwards and forwards or up and down (like a piston) in a straight line. The third type is (3) \_\_\_\_\_ motion, which swings from side to side (like a pendulum). Finally, there is (4) \_\_\_\_\_ motion, which is motion in a circular direction, like the shaft of a wind turbine.



- 4 Match the numbered arrows in the diagram in 2 with the motion words in 3.


- 5 Complete these sentences. Use the present simple of the verbs in the box.

- 1 Propeller shafts \_\_\_\_\_.
- 2 A car engine piston \_\_\_\_\_.
- 3 Pendulums \_\_\_\_\_.
- 4 When you tighten a screw, it \_\_\_\_\_ clockwise.

oscillate   reciprocate  
rotate

**Scanning 6** Practise your speed reading. Look for the information you need on the SPEED SEARCH pages (118–119). Try to be the first to complete the task.

Task: Find out five advantages (or benefits) of the wave energy converter.

**Listening 7**  Listen to this presentation about the Wave Energy Converter, and complete the listener's notes.

### WAVE ENERGY CONVERTER

DEFINITION: system for converting (1) \_\_\_\_\_ from sea waves into electrical power

LOCATION: fixed to the (2) \_\_\_\_\_

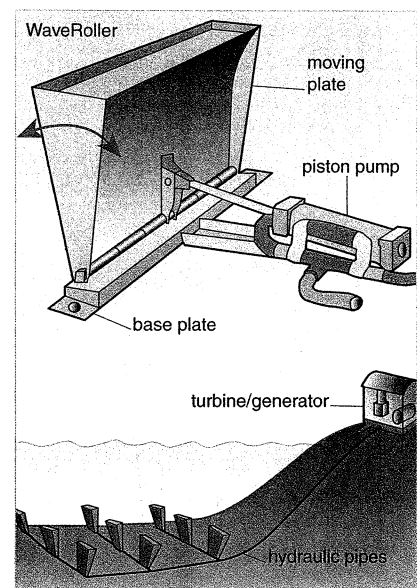
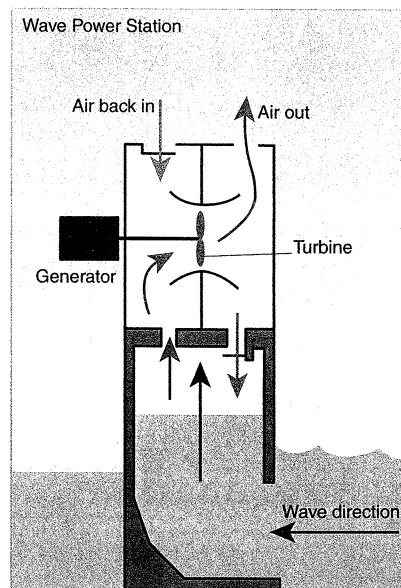
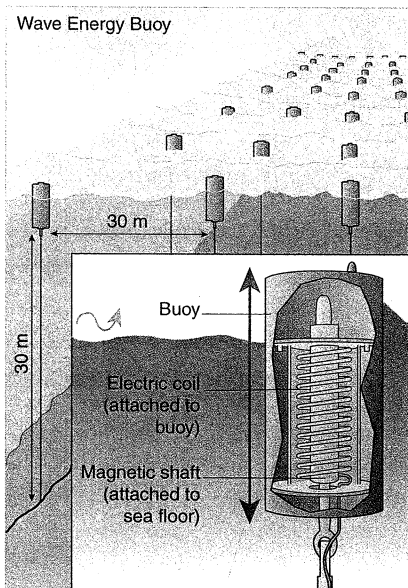
MAIN COMPONENTS: a flexible disc, a lever, a (3) \_\_\_\_\_ which takes in sea water, a set of (4) \_\_\_\_\_, many sea water pipes, a (5) \_\_\_\_\_ on the land

MAIN SPECIFICATIONS: 4.6 m (H) x (6) \_\_\_\_\_ m (L); pipe (7) \_\_\_\_\_ mm (W); pressure (8) \_\_\_\_\_ kPa (1000 psi); can generate (9) \_\_\_\_\_ kW of electricity

OPERATION: wave oscillates → pushes disc (10) \_\_\_\_\_ → lever oscillates → reciprocating pumps push water through pipe at (11) \_\_\_\_\_ pressure → turbine (12) \_\_\_\_\_ → generates electricity

BENEFITS: Wave energy is a (13) \_\_\_\_\_ energy resource; uses no fossil fuels

**Task 8** Work in small groups. Find out about one of these wave energy systems. Prepare a presentation about your system.



Group 1. Turn to page 112 for your notes about the *Wave Energy Buoy*. (1)  
 Group 2. Turn to page 114 for your notes about the *Wave Power Station*. (2)  
 Group 3. Turn to page 116 for your notes about the *WaveRoller*. (3)

**9** With your group, give a presentation about your system to the class. Answer questions from the class.

**Writing 10** Write a description of your group's system, explaining how it works.