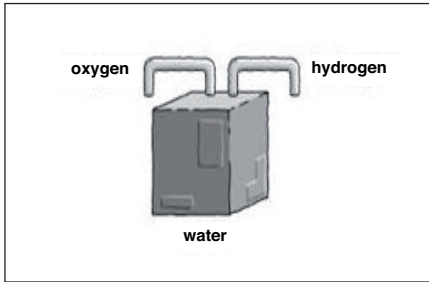
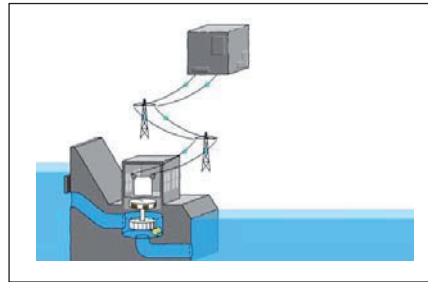


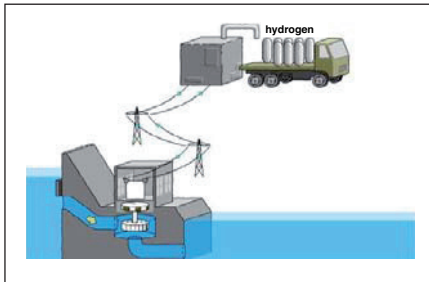
Exercise 1

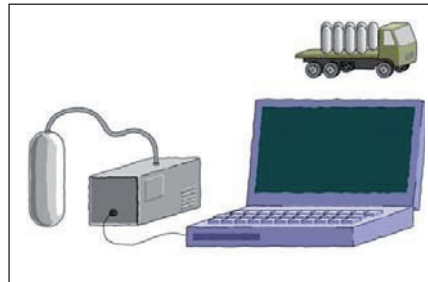
Write the number of each caption (1-7) next to the correct picture.

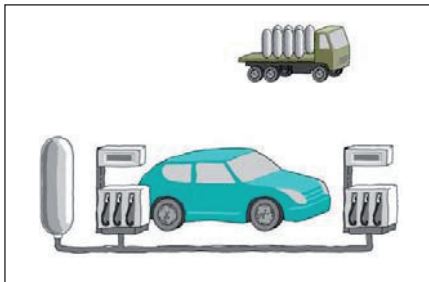
It's hard to store electricity, so in the future we might store energy in the form of hydrogen. But first we'd have to make the hydrogen. Here's how it could work:

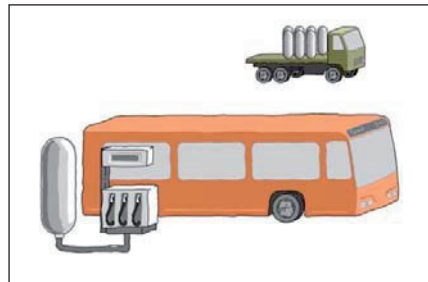


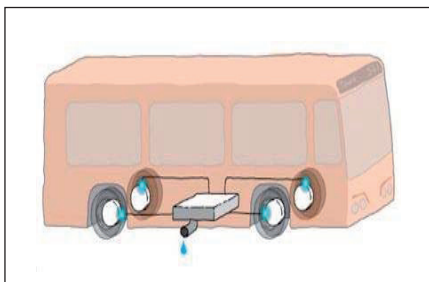












1. It would even be used to generate electricity for buses.
2. And best of all, the only waste product from a hydrogen fuel cell is water.
3. Using a device called an electrolyser, we'd break water down into hydrogen and oxygen.
4. The hydrogen would then be transported around the country to places where people need it to make electricity.
5. It would be used in fuel cells to generate electricity for computers.
6. To do this you need electricity, ideally made from a renewable source, such as this hydro power station.
7. It would also be used to generate electricity for cars.

## Exercise 2

Use the table to talk with your partner about hydrogen power.

In the future we		might	store energy in the form of hydrogen	
Here's how it		could	work:	
First			break water down	around the country
Then	we	would	transport the hydrogen	to generate electricity
			use it in fuel cells	into hydrogen and oxygen

## Exercise 3

Write sentences in the passive form, using the table above.

1. In the future energy might ...
2. First the water would ...
3. Then the hydrogen would ...
4. It would ...

## Exercise 4

Write answers to the questions.

1. Why would it be useful to make and store hydrogen?
2. What device do you need to break water down into parts?
3. What parts does water break down into?
4. If hydrogen were used to generate electricity, what could the electricity be used for?
5. What is the only waste product from a hydrogen fuel cell?

## Objectives

## Science

Students learn how hydrogen could one day be made and stored as a source of electricity.

## Language

Skills: Speaking, listening, reading, writing

Grammar: Modals: *would, could, might*; passive verb forms

Vocabulary: Nouns: *electricity, energy, hydrogen, device, electrolyser, oxygen, renewable source, hydro power station, fuel cells, waste product*

Verbs: *store, break down, transport, generate*

## Activities

Activities	Language skills
Students discuss hydrogen power and match captions with a set of pictures	Speaking; reading; vocabulary
They watch the animation and check if their sequence of captions is correct.	Listening; reading; vocabulary
They talk about the process of producing hydrogen power	Speaking; listening; vocabulary; modals: <i>would, could, might</i>
They write sentences about the process of producing hydrogen power	Writing; vocabulary; modals: <i>would, could, might</i> ; passive verb forms
They answer some questions	Writing; reading; vocabulary
(Groups only:) They give an oral commentary on the animation	Speaking; vocabulary; modals <i>would, could, might</i> ; passive verb forms

## Procedure

## With the whole class

(Typical situation: whole class watching the presentation and animation on an interactive whiteboard or projector.)

- 1 [Slide 1] Introduce the topic. Ask the class to say what they know about hydrogen power. Introduce some key vocabulary (see above), but do not go into detail. Then ask students to work in pairs and do exercise 1 on the worksheet: they match the captions with the correct picture. Monitor and help students talk about the pictures, but do not give correct answers at this point.
- 2 [Slides 2 and 3] Play the animation. Ask the class to watch and listen carefully and check whether they matched the captions with the pictures correctly. Afterwards, check the correct sequence with the whole class. (See answer key.)
- 3 Grammar focus 1 (optional – see below).

## Teacher's Notes

- 4 [Slide 4] Tell students not to look at exercise 1 while they do the next exercise. Students work in pairs and do exercise 2 on the worksheet: they use the table to talk with their partner about hydrogen power. Monitor and help.
- 5 Grammar focus 2 (optional – see below).
- 6 Students do exercise 3 on the worksheet: they write sentences in the passive form, using the table from exercise 2. Check answers with the whole class. (See answer key.)
- 7 Students do exercise 4 on the worksheet: they work in pairs writing answers to the questions. Check answers with the whole class. (See answer key.) Check that students have understood the whole process of producing hydrogen power.

### With groups (one group studies hydrogen power and then presents it to the class)

(Typical situation: students arranged in groups around computers eg, in a language lab)

- 1 [Slide 1] Ask students to work in their group and do exercise 1 on the worksheet: they match the captions with the correct picture.
- 2 [Slides 2 and 3] Students play the animation and check whether they matched the captions with the pictures correctly. They can check their answers with the answer key.
- 3 Grammar focus 1 (optional – see below).
- 4 [Slide 4] Tell students not to look at exercise 1 while they do the next exercise. Students work in pairs and do exercise 2 on the worksheet: they use the table to talk with their partner about hydrogen power.
- 5 Grammar focus 2 (optional – see below).
- 6 Students do exercise 3 on the worksheet: they write sentences in the passive form, using the table from exercise 2. They can check their answers using the answer key.
- 7 Students do exercise 4 on the worksheet: they work in pairs writing answers to the questions. They can check their answers using the answer key.
- 8 [Slide 5] The group gets ready to give an oral commentary on the animation: they may like to rehearse it once or twice. Play the animation without sound; students give the commentary.

### Grammar focus 1 (optional): modals

1. Focus on the introductory sentences from exercise 1: *It's hard to store electricity, so in the future we might store energy in the form of hydrogen. But first we'd have to make the hydrogen. Here's how it could work:* Write the sentences on the board or ask students to highlight them on their worksheet. Ask students to find three modal verbs in the sentences (*might*, *'d (would)* and *could*) and to underline them. Ask students whether these modal verbs are showing certainty (something that will definitely happen), probability (something that will probably happen) or possibility (something that might happen). (*might*, *could* – possibility; *would* – certainty).
2. Write the structure of modal verb forms on the board: modal verb + infinitive without *to*.
3. If you wish, give students further grammar exercises practising modal verbs.

**Grammar focus 2 (optional): passive form of modal verbs**

1. Focus on sentence 4 from exercise 1: *The hydrogen would then be transported around the country to places where people need it to make electricity.* Write the sentence on the board or ask students to highlight it on their worksheet. Underline the passive verb form *would be transported*. Ask students to identify whether this verb form describes an active process or a passive process. Is the phrase describing what the subject (the hydrogen) would do, or what would happen to the subject?
2. Explain to the students that scientific processes are often expressed using passive forms, because the most important thing is the event and not who or what is carrying it out. Explain to students that the example *would be transported* shows the passive form of a modal verb.
3. Write the structure of the passive form of modal verbs on the board: *would/could/should/may/might* etc + *be* + past participle.
4. If you wish, give students further grammar exercises practising the passive form of modal verbs.

**Hydrogen power****Worksheet answer key****Exercise 1**

3	6
4	5
7	1
2	

**Exercise 3**

1. In the future energy might be stored in the form of hydrogen.
2. First the water would be broken down into hydrogen and oxygen.
3. Then the hydrogen would be transported around the country.
4. It would be used in fuel cells to generate electricity.

**Exercise 4**

1. Because it is hard to store electricity.
2. An electrolyser.
3. Hydrogen and oxygen.
4. Computers, cars and even buses.
5. Water.