

4.2 Hydrogen-oxygen fuel cells

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS fuel cell 燃料电池 • hydrogen-oxygen fuel cells 氢氧燃料电池 • pollutants 污染物
• hydrogen 氢气 • oxygen 氧气

Objective

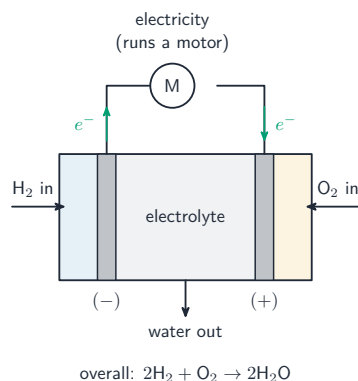
Build the skills to answer exam questions on **hydrogen-oxygen fuel cells** 氢氧燃料电池 — how they work and how they compare with a petrol engine.

You must be able to:

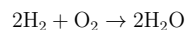
- give the overall reaction in a hydrogen-oxygen fuel cell
- state the advantages and disadvantages vs a petrol engine
- explain why the only product is water

1 Worked examples

■ The fuel cell



A fuel cell turns chemical energy straight into electricity; water is the only product



- **advantage:** only product is water — no air pollution.

- **disadvantage:** hydrogen is hard/dangerous to store; making it may use fossil fuels.

2 Practice

2.1 A hydrogen-oxygen fuel cell takes in 4 g of hydrogen. Write the overall equation for the cell, and state the only product. [2]

2.2 State the only chemical product of the fuel cell. [1]

3 Exam-style questions

3.1 A key advantage of a hydrogen fuel cell over a petrol engine is that it: [1]

A	B
C	D

- A is easier to refuel
- B produces only water, not pollutants
- C uses no energy
- D stores its fuel more easily

3.2 Compare a hydrogen-oxygen fuel cell with a petrol engine.

(a) Give one advantage of the fuel cell. [1]

(b) Give one disadvantage of the fuel cell. [1]

3.3 Explain why using a hydrogen fuel cell may still cause some pollution overall. [2]