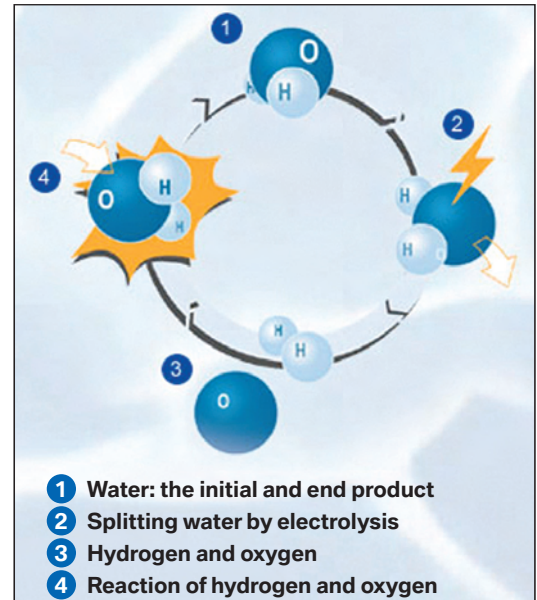


Renewable Energy

Hydrogen power

3d

- Hydrogen was first identified as a chemical element in 1766 by Henry Cavendish. Shortly afterwards Antoine Laurent Lavoisier discovered that hydrogen was the main component of water.
- Hydrogen has the ability to act as an 'energy carrier'. This means it can be used to store and deliver energy to where it is needed.
- As a source of energy hydrogen has the advantage over fossil fuels - when hydrogen burns all that is produced is water. It creates no pollution and importantly, no carbon dioxide.
- Hydrogen (H) is most commonly found in combination with oxygen (O) to form water (H₂O), where two hydrogen atoms join to one oxygen atom. Although it is also found as a gas in the air.
- Due to its low density hydrogen was first used as a buoyancy instrument. In 1783 French scientist Jacques Charles inflated a large balloon with hydrogen gas, allowing it to float over 900m high in the air before an amazed crowd.
- As part of water molecules, hydrogen is found in all living things – our bodies are 10% hydrogen.
- As hydrogen is mainly found either in water molecules or in living things (biomass), hydrogen needs to be removed from a compound before it can be used as a source of energy. This can be an expensive process.
- Hydrogen can be made through the electrolysis of water, which is the process by which electricity is used to split water into hydrogen and oxygen.
- In simple terms, two electrodes dipped in water are subjected to a flow of voltage. The positively charged hydrogen ions (cations) gather around the negative cathode, the oxygen ions (anions) move to the positive anode and the hydrogen gas generated in this process is retained.
- The energy used to power electrolysis needs to come from solar, wind or water power, if hydrogen is to provide a totally clean source of energy.
- Hydrogen can also be produced from rotting plant or animal matter, known as biomass. The rotting matter gives off the hydrogen-rich gas methane, which can be converted into pure hydrogen.



Hydrogen can be generated from water.



When hydrogen is burnt, only water is produced.

Research Links

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