CLAIMS:

1. An electrochemical cell comprising:

an anodic half-cell having an inlet configured to receive hydrogen at a first pressure;

a cathodic half-cell having an outlet configured to transfer hydrogen at a second pressure;

a membrane electrode assembly (MEA) separating said anodic half-cell and said cathodic half-cell; and

a power source;

wherein said MEA comprises at least:

an anodic electrode

a cathodic electrode; and

an anion exchange membrane (AEM) therebetween.

2. An electrochemical cell according to claim 1, comprising at least one anodic outlet.
3. An electrochemical cell according to claim 1 or claim 2, further comprising pressure regulating means at any one or more of:

the inlet of the anodic half-cell;

the outlet of the cathodic half-cell;

an outlet of the anodic half-cell, if present.

4. An electrochemical cell according to 3, wherein a pressure regulating means at the outlet of the cathodic half-cell is configured to, in use, maintain a gas pressure in the cathodic half-cell greater than a gas pressure in the anodic half-cell.
5. An electrochemical cell according to any of the preceding claims, wherein the MEA further comprises one or more catalysts.
6. An electrochemical cell according to claim 5, wherein the or each catalyst is not a platinum group metal.
7. An electrochemical cell according to any of the preceding claims, wherein the MEA further comprises any one or more of:

an anodic gas diffusion layer (GDL);

a cathodic GDL;

a microporous layer (MPL) at the anodic and/or cathodic side;

a water management membrane on either the anodic and/or cathodic side; membrane support at an anodic and/or a cathodic side.

8. An electrochemical cell according to any of the preceding claims, wherein said AEM comprises a composite membrane.
9. An electrochemical cell according to any of the preceding claims, wherein said AEM is doped with a source of OH^-.
10. An electrochemical cell according to any of the preceding claims, including an ionomer on at least one of the cathodic side of the AEM and the anodic side of the AEM
11. An electrochemical cell according to any of the preceding claims, wherein the MEA is ionomer-free and/or binder-free on at least one of an anodic or a cathodic side of said AEM.
12. An electrochemical cell according to any of the preceding claims, wherein the AEM comprises hygroscopic particles.
13. An electrochemical cell according to claim 12, wherein said hygroscopic particles are arranged in a concentration gradient, the concentration thereof being higher on a cathodic side of the AEM.
14. An electrochemical cell according to any of the preceding claims, when dependent on claim 3, wherein a pressure regulating means is configured to, in use, maintain a pressure differential across the cell in the range 1-1000bar.
15. An electrochemical cell according to any of the preceding claims, comprising a moisture sensor coupled to the outlet of said cathodic half-cell.
16. An electrochemical cell according to any of claims 1 to 15, comprising output means configured to be communicably coupled to an external hydrogen-fuelled device for direct refuelling thereof.
17. An electrochemical cell according to any of claims 1 to 15, wherein, in use, during ramp down, power generated by the cell is stored.
18. An electrochemical cell according to any of the preceding claims, wherein said power source is reverse pulse.
19. ~~A hydrogen sensor comprising an electrochemical cell according to any of claims 1 to 15, wherein said anodic half-cell comprises an outlet, the sensor further comprising means for applying a voltage to said cell and a current measuring means configured to measure a~~

~~current through the cell as a result of said voltage being applied, a current being indicative of the presence of hydrogen in a gas stream flowing therethrough.~~

~~20. A hydrogen sensor comprising an electrochemical cell according to any of claims 1 to 15, wherein said anodic half-cell comprises an outlet, the sensor further comprising means for causing a current to flow through said cell and a voltage measuring means configured to measure a voltage across the cell as a result of said current being applied, a voltage being indicative of the presence of hydrogen in a gas stream flowing therethrough.~~

~~21. A hydrogen sensor comprising an electrochemical cell according to any of claims 1 to 15, wherein said anodic half-cell comprises an outlet, the sensor further comprising means for the passive measurement of the open circuit potential said potential being proportional to the partial pressure of the contaminant gas.~~

~~22.~~19. Apparatus for stripping hydrogen from a gaseous stream, the apparatus comprising an electrochemical cell according to any of claims 1 to 15, wherein said anodic half-cell is provided with an outlet configured to allow contaminate gases therein to be vented.

~~23.~~20. An electrochemical cell assembly comprising at least first and second electrochemical cells according to any of claims 1 to 15, configured in a stack, wherein the outlet of the cathodic half-cell of said first electrochemical cell is in fluid communication with the inlet of the anodic half-cell of the second electrochemical cell.

~~24.~~21. An electrochemical cell assembly according to claim ~~22~~19, comprising a plurality of electrochemical cells according to any of claims 1 to 15 arranged in series as a stack, wherein the outlet of the cathodic half-cell of each electrochemical cell except the last electrochemical cell in the stack is in fluid communication with the inlet of the anodic half-cell of the immediately adjacent electrochemical cell in the in the stack, and the outlet of the cathodic half-cell of the last electrochemical cell in the stack is configured to deliver hydrogen to an external destination.

~~25.~~22. A method of processing a gaseous stream containing hydrogen, comprising providing an electrochemical cell according to any of claims 1 to 15, feeding a hydrogen-containing gaseous stream to the inlet of the anodic half-cell, and transmitting hydrogen from the outlet of the cathodic half-cell.

~~26.~~23. A method of processing a gaseous stream containing hydrogen, comprising providing an electrochemical cell assembly according to claim ~~22~~ 19 or claim ~~23~~20, feeding a hydrogen-containing gaseous stream to the inlet of the anodic half-cell of the first electrochemical cell in the stack, transferring hydrogen from the outlet of the cathodic half-cell of each electrochemical cell in the stack to the inlet of the anodic half-cell of another electrochemical cell, and delivering hydrogen from the output of the cathodic half-cell of a last electrochemical cell in the stack to an external destination.