

Fuel cells-Hydrogen fuel cells

Hydrogen-oxygen fuel cell uses hydrogen and oxygen to produce electricity, with water as the only by-product

- Fuel cells are devices that convert chemical energy to electrical energy.
- The oxidation of the fuel and the reduction of the oxidant take place at the electrodes.
- Reduction and oxidation take place simultaneously and hence it is a redox reaction. Fuel cells produce electrical energy at much lower temperature without a flame.
- A typical fuel consists of a anode and a cathode.
- Fuel is always fed through the anode.
- Reduction happens at the cathode and oxidation at the anode.
- The anode acquires a negative polarity and the cathode acquires a +ve polarity.
- The catalyst platinum activates the hydrogen molecules to split into protons (H^+) and electrons (e^-).
- The electrons flow through the external circuit and complete the circuit.
- A fuel cell produces electricity as long as the fuel (hydrogen) is supplied.

-Advantages of using **Hydrogen**-Oxygen fuel cells as compared to gasoline/petrol in vehicles:

- 1.It is non -polluting/ it does not produce greenhouse gases nor does it cause global warming.
- 2.It does not use up the fossil fuels. It is obtained by the electrolysis of water and water is a renewable resource.

Disadvantages of using Hydrogen-Oxygen fuel cells as compared to gasoline/petrol in vehicles:

- 1.Fuel cells cannot be used for large-scale energy production, so conventional fossil fuel or nuclear power stations still have to be relied upon
- 2.A larger storage volume is need to store hydrogen as compared to gasoline
3. Also if hydrogen is stored under high pressure, the safety would also be an issue.