

How a Fuel Cell Works

Fuel cells are being widely considered as having the potential to compete with and displace many energy production methods currently in operation by producing electricity and heat 'cleanly' and efficiently.

A fuel cell is similar to a giant battery that converts hydrogen, or hydrogen containing fuels, directly into electrical energy and heat. This is achieved through the electrochemical reaction of hydrogen and water into oxygen and is the reversal of the electrolysis process. The chemical formula for this process is: $2 \text{H}_2(\text{gas}) + \text{O}_2(\text{gas}) \rightarrow 2 \text{H}_2\text{O} + \text{energy}$.

The basic configuration of a fuel cell is not a complicated one. The fuel cell comprises of an anode, a cathode and an electrolyte. Hydrogen is supplied to the Anode and Oxygen to the Cathode. Between the Anode and Cathode, or Electrodes is an Electrolyte. This Electrolyte chemically divides the Proton and Electron of each Hydrogen atom. The Electron then passes into an electrical circuit while the electrolyte attracts the Proton over to the Cathode. After passing through the electrical circuit the Electron moves to the Cathode where it combines with the Proton and Oxygen producing water. This water is hot therefore the efficiency of the fuel cell can be increased through cogeneration.

