A fuel cell is in an Electrochemical cell that makes the chemical energy of fuel and oxygen into electricity. Fuel cells are different from most batteries because they use a source of fuel and oxygen to sustain the chemical reaction. Fuel cells can produce electricity continuously for as long as fuel and oxygen are supplied.” "Fuel cell." *Wikipedia*, Wikimedia Foundation, 20 Oct. 2022, en.wikipedia.org/wiki/Fuel\_cell. Accessed 28 Oct. 2022

# Design features of a fuel cell

Diagram

Description automatically generated

* Electrolyte substance
* Used energy, mainly hydrogen
* Anode catalyst, breaks down fuel into ions and electrons
* Cathode catalyst, makes ions into waste chemical (usually water)

# Phosphoric acid fuel cell

### Phosphoric acid is used to pass protons from the anode to the cathode catalyst. Phosphoric acid fuel cells usually work from 150 to 200 degrees Celsius (302 to 392 degrees Fahrenheit). The heat can produce steam for air conditioning or any heat consuming energy system.

# Alkaline fuel cell

It was the primary source of energy for the Apollo space program launched by NASA. “The space between the two electrodes is filled with a concentrated solution of [KOH](https://en.wikipedia.org/wiki/Potassium_hydroxide) or [NaOH](https://en.wikipedia.org/wiki/Sodium_hydroxide) which serves as an electrolyte. H2 gas and O2 gas are bubbled into the electrolyte through the porous carbon electrodes.” "Fuel cell." *Wikipedia*, Wikimedia Foundation, 20 Oct. 2022, en.wikipedia.org/wiki/Fuel\_cell. Accessed 28 Oct. 2022. The reaction has a combination of hydrogen gas and oxygen gas to make water. The cell runs until the battery is dead. It can go up to 0.9 volts.

QUESTIONS:

What is the input/output?

Is the water that comes out cleaner?