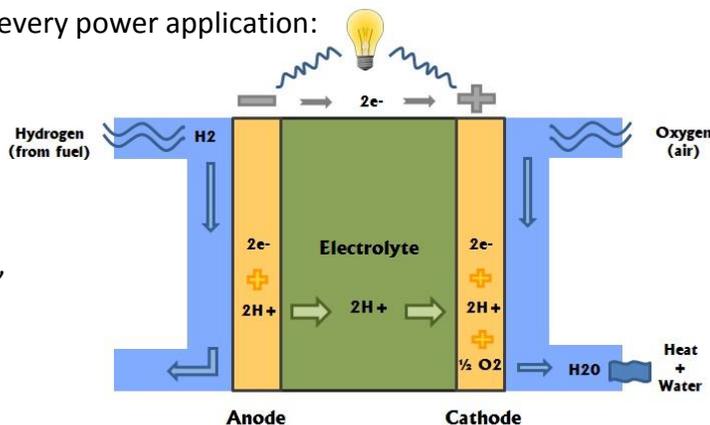


## What is a Fuel Cell?

Fuel cells generate electricity through a chemical reaction, rather than combustion. Fuel cells are inherently clean, quiet and efficient. When hydrogen is used as a fuel, they produce only heat and water vapor as by-products.

Fuel cells are versatile and are today being used in nearly every power application:

- Light-duty passenger vehicles
- Heavy-duty buses and trucks
- Off-road vehicles such as fork lifts and trucks
- Chargers for consumer electronics
- Primary and back-up power for homes, businesses, and remote sites
- Multi-megawatt utility grid power plants



## What is Hydrogen?

Many fuel cells operate on hydrogen gas, the lightest element gas often utilized for industrial purposes. Hydrogen has been produced on a large-scale for decades, used primarily to remove sulfur from gasoline, manufacturer fertilizer, and support other chemical industries. Millions of metric tons of hydrogen are produced annually in the United States, which is enough to fuel tens of millions of fuel cell electric vehicles (FCEVs).

Today, 95% of the hydrogen produced in the United States is made by industrial-scale natural gas reformation. As sustainable renewable energy generation advances in the United States, it is anticipated low to zero carbon hydrogen production will become more commonplace.

In addition to hydrogen gas, some fuel cells can operate directly on other fuels such as natural gas, biogas, methanol and more.

## How do Fuel Cells Work?

Fuel cells use a chemical reaction of oxygen (from the air) and a hydrogen-carrying fuel to produce electricity, heat, and water.

A fuel cell is composed of an anode, a cathode, and an electrolyte membrane. The reaction takes place when hydrogen passes through the anode and splits between an electron and proton. The electrons are forced through a circuit which generates electricity and heat, while the protons pass through the electrolyte membrane. The protons and electrons then combine with the oxygen to produce water.