

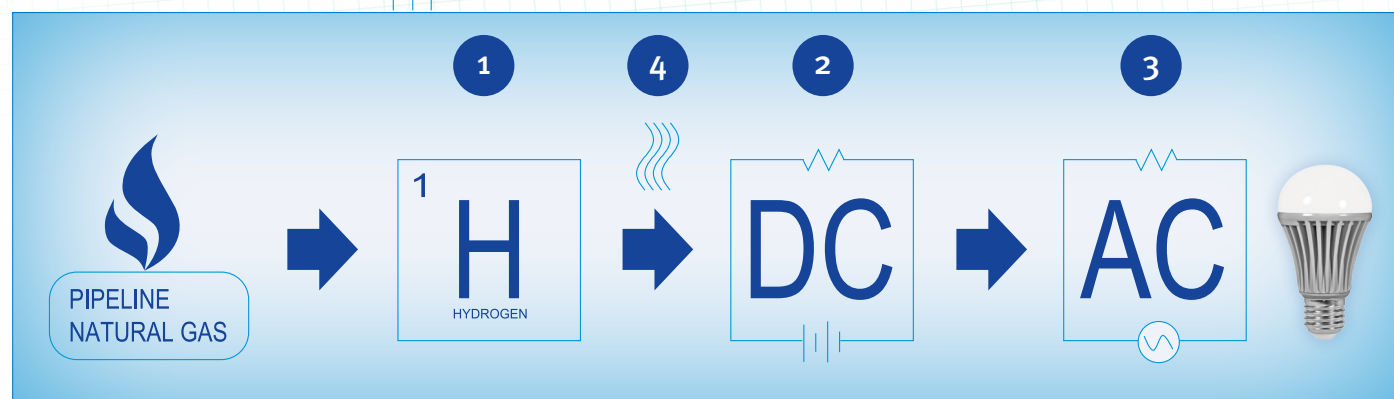


## HOW A FUEL CELL WORKS

PURECELL® SYSTEM

### FUEL CELLS ARE CLEAN, RELIABLE, AND COST-EFFECTIVE.

A fuel cell is an electrochemical device that combines hydrogen fuel and oxygen to produce electricity, heat and water. Fuel cells operate without combustion, so they are virtually pollution free. Since the fuel is converted directly to electricity and heat, a fuel cell's total system efficiency can be much higher than internal combustion engines, extracting more energy from the same amount of fuel. The fuel cell itself has no moving parts, making it a quiet and reliable source of power.



1

#### Fuel Processor

The fuel processor converts pipeline natural gas to hydrogen to feed the fuel cell stack.

2

#### Fuel Cell Stack

Hydrogen gas and oxygen from air are combined in an electrochemical process that produces Direct Current (DC) power, pure water and heat.

3

#### Power Conditioner

The DC power provided by the fuel cell stack is conditioned to provide high quality Alternating Current (AC) power output.

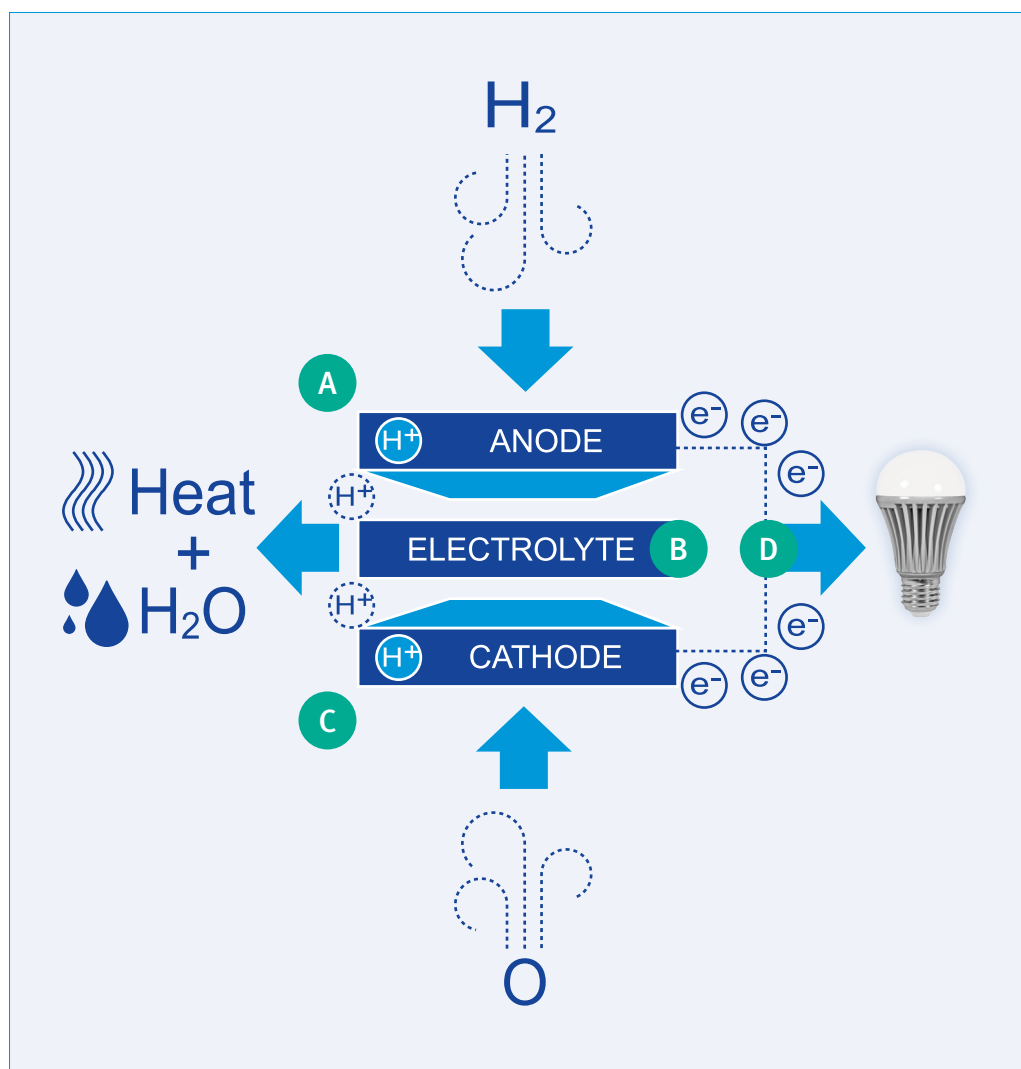
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#### Reclaimed Heat

Useful heat is recovered internal to the system. Combined use of heat and power can deliver 90% system efficiency.

## INSIDE THE FUEL CELL

The fuel cell is composed of an anode (a negative electrode that provides electrons), an electrolyte in the center, and a cathode (a positive electrode that accepts electrons).



### A Anode

As hydrogen flows into the fuel cell anode, a catalyst layer on the anode helps to separate the hydrogen atoms into protons (hydrogen ions) and electrons.

### B Electrolyte

The electrolyte in the center allows only the protons to pass through the electrolyte to the cathode side of the fuel cell.

### C External Circuit

The electrons cannot pass through this electrolyte and, therefore, must flow through an external circuit in the form of electric current. This current can power an electric load.

### D Cathode

As oxygen flows into the fuel cell cathode, another catalyst layer helps the oxygen, protons, and electrons combine to produce pure water and heat.

### E Fuel Cell Stack

Individual fuel cells can be combined into a Fuel Cell "Stack" to increase the total electrical output.

## ABOUT DOOSAN FUEL CELL AMERICA, INC.

Doosan Fuel Cell America, Inc. (Doosan FC) headquartered in South Windsor, Connecticut, designs, engineers and manufactures stationary fuel cells for commercial and industrial applications. The company's technological leadership is in 400-kilowatt phosphoric acid fuel cells capable of supplying combined heat and power to building and utility systems. Doosan FC is a subsidiary of Doosan Corporation, a South Korea-based industrial company founded in 1896 with operations in 38 countries.

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