



Lesson 2: Making a Series Fuel Cell Stack

A fuel cell stack is made by connecting two or more fuels together. Just as batteries can be combined to produce different voltages and current, fuels can also be connected, resulting in various amounts of electrical energy. Can you find out how different fuel cell stacks are used to produce a desired voltage?

Doing the Science

1. Start the Fuel Cells Simulation by clicking on the “Sim” tab.
2. Use the materials on the top shelf to build one fuel cell.
3. Once your fuel cell is correctly built, click on the 100% H₂ Gas Flow button.
4. Next, click on the 100% O₂ Gas Flow button.
5. Click the “Make Stack” button at the bottom of the screen and then click the “Series” button.
6. Drag two or more fuel cells into the slots on the right side of the screen. (Remember that a stack is two or more fuel cells.) Dragging a fuel cell to the top left of the screen causes the H₂ and O₂ tank positions to switch. Record your stack construction, the stack voltage, and the stack current in Table 1.
7. Create different stack combinations to produce a variety of voltages and current. Make sure to record your stack construction and results in Table 1.

Table 1. Series Fuel Cell Voltage and Current

Series Stack Construction	Voltage (volts)	Current (amps)

Do You Understand?

1. Which stack construction produced the greatest voltage? Which stack construction produced the largest current?

2. Describe how fuel cell stacks resemble batteries in an electrical circuit.