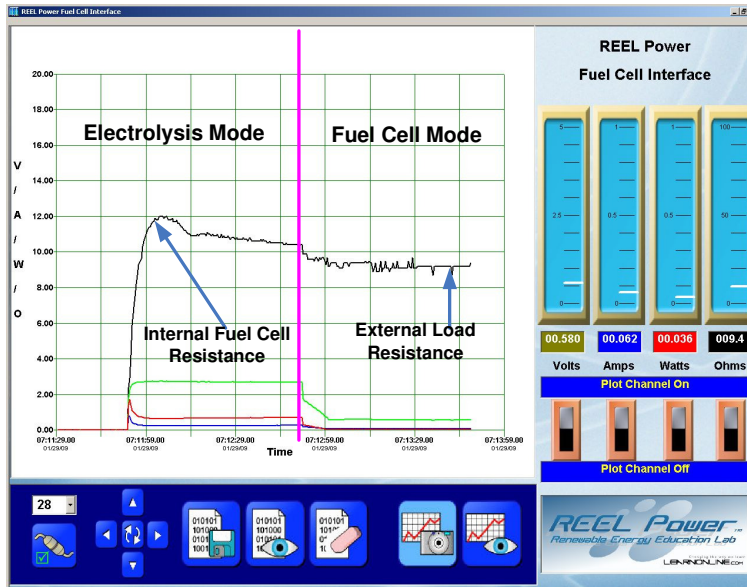




Fuel Cell Interface – Quick Look

The **Fuel Cell Interface** is unique in that no other product has the ability to allow a reversible PEM fuel cell to be electrolyzed at the push of a button as well as graphically displaying the fuel cell's **voltage (green)**, **current (blue)**, **power (red)** and **load resistance (black)** outputs on a computer monitor like that shown below.



The **Fuel Cell Interface** operates in two modes – **Electrolyzer Mode** and **Fuel Cell Mode**.

In the **Electrolyzer Mode** an external power source like a solar panel, 3 volt battery or DC power supply provides power directly to the fuel cell in order to decompose water into hydrogen and oxygen. The Electrolyzer Mode is entered by pushing and holding the red button in the center of the circuit board. Here, all the energy from the power source is directed into the fuel cell and the normal

load is switched out - the fuel cell becomes the load. The left part of the plot shows how the fuel cell behaves in Electrolyzer Mode.

In the **Fuel Cell Mode** the fuel cell, itself, becomes the power source that delivers voltage, current and power into the attached resistive load. The Fuel Cell Mode is entered by default by not pushing on the red button. The right part of the curve is an example of Fuel Cell Mode.

Because fuel cells are closely related to the science of chemistry, the experiments will necessarily include references to chemical reactions (including formulas) that occur within the fuel cell, which support the two modes just described. The experiments demonstrate how a fuel cell and fuel cell stacks can be evaluated in terms of understanding electrical characteristics, electrolyzing water and determining efficiencies.

The circuit board can accommodate fuel cell voltages up to 10 volts DC and currents up to 1 amp. Plus, the fuel cell's internal resistance is part of the graphic display – something that no similar measurement product can match. In the **Fuel Cell Interface** you have a professional measurement instrument that is suitable for a serious study of fuel cells. Consider these experiments as just a basis for your own, expanded applications.

