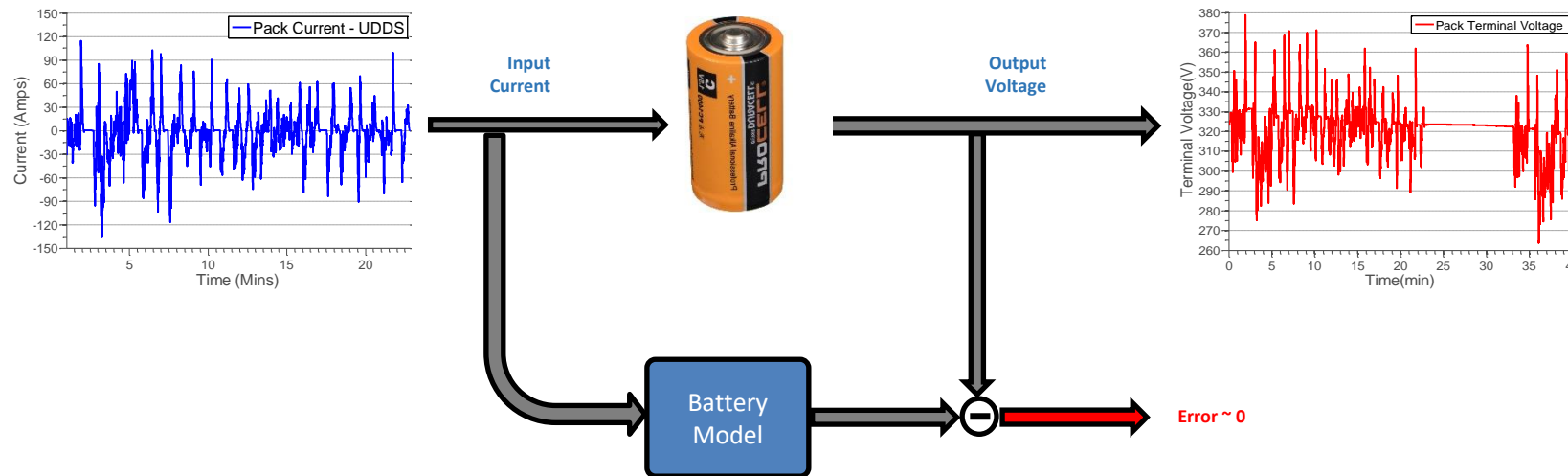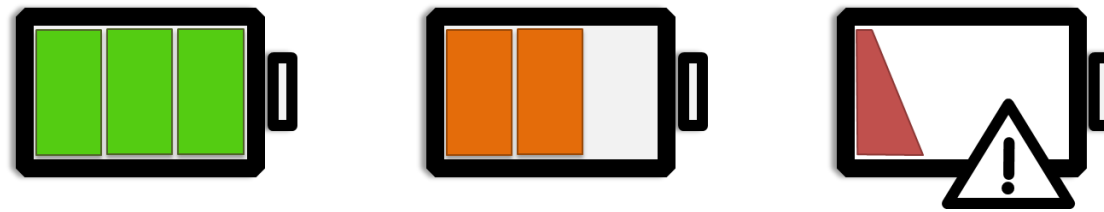# BATTERY MODELING: WHY BATTERY MODELING?

- **Used to Monitor Battery parameters such as SOC**
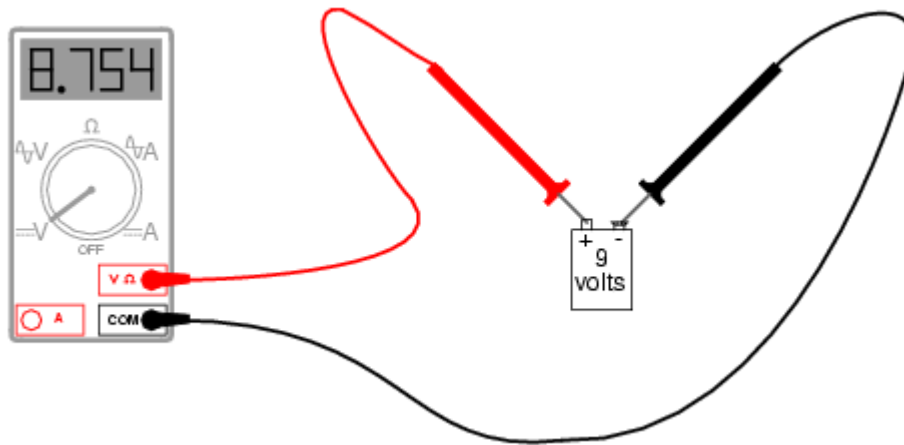
OPEN CIRCUIT VOLTAGE: DEFINITION

- The Open-circuit voltage (OCV) is the difference of electrical potential between two terminals of a device when the device is disconnected from any circuit.

- There is no external load connected.

- No external electric current flows between the terminals.
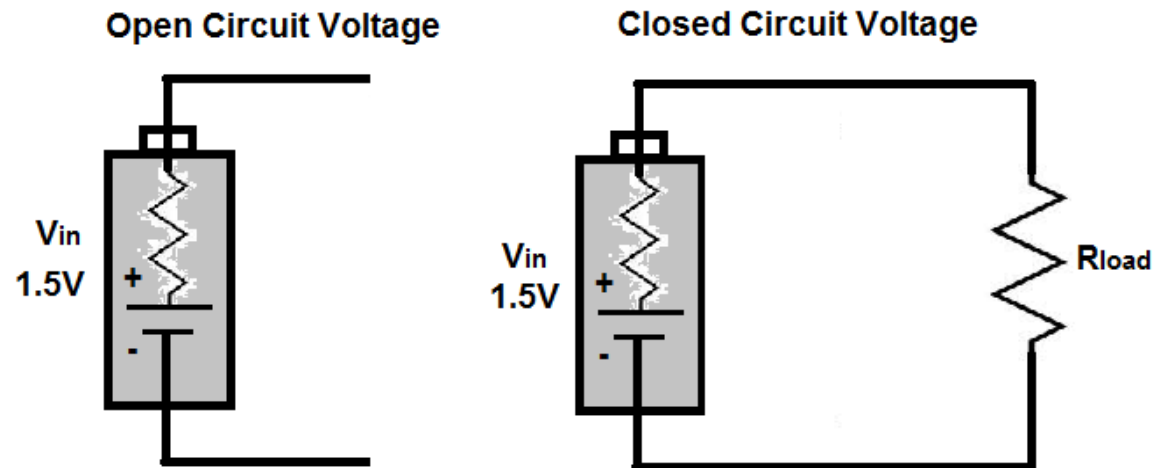
OPEN CIRCUIT VOLTAGE:

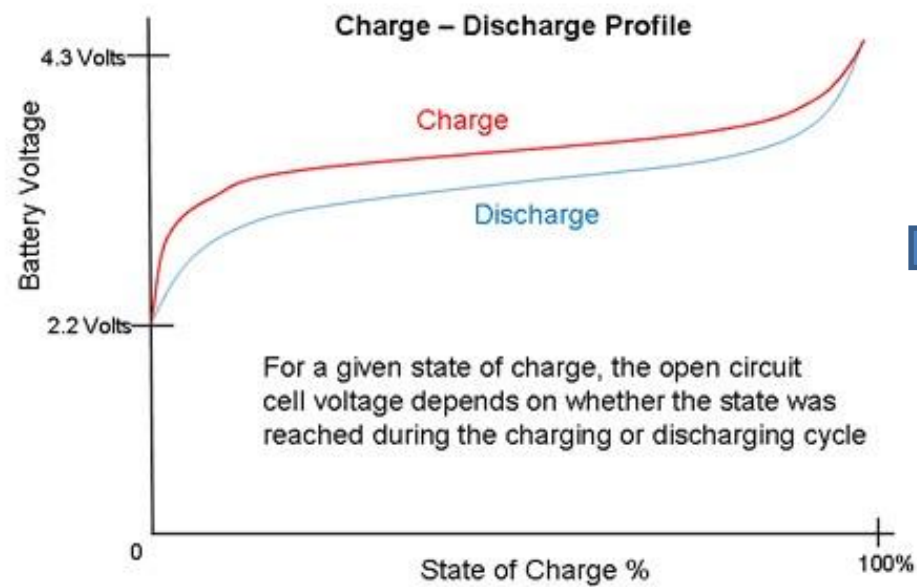**Example: Battery Open Circuit Voltage**

- If you measure the voltage of the battery terminals with a multi-meter, you will read the OCV even if there is no current is flowing in the circuit.

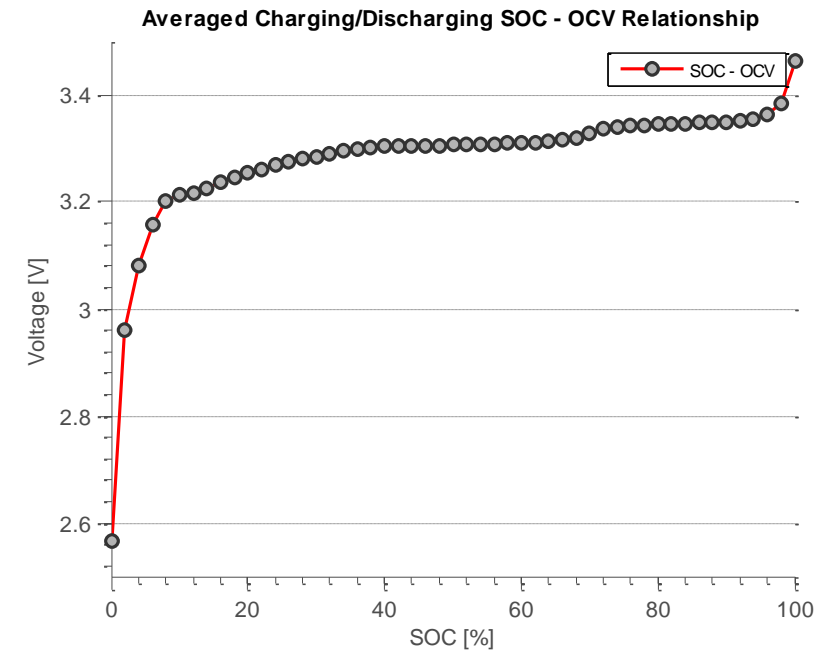- The OCV is function of the battery State-of-Charge (SOC).

OPEN CIRCUIT VOLTAGE: SOC-OCV RELATIONSHIP

- There is a relationship between the battery Open-circuit voltage (OCV) and State of Charge (SOC).
- The relationship depends on the battery chemistry and the direction of charging and discharging.
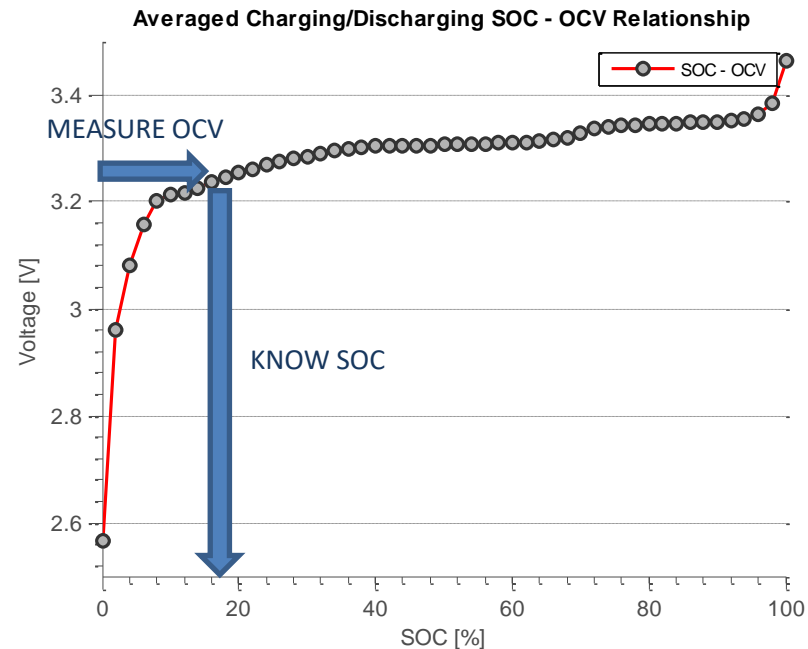

AVERAGING

http://www.honcell.com/faq/index-9.html

http://www.learningaboutelectronics.com/Articles/What-is-open-circuit-voltage.php

OPEN CIRCUIT VOLTAGE: VOLTAGE-BASED SOC/SOC-OCV RELATIONSHIP IMPORTANCE

- This relationship is important because it can be used to infer the SOC from the OCV.
- This technique is called voltage-based SOC Estimation.

Averaged Charging/Discharging SOC - OCV Relationship

http://www.learningaboutelectronics.com/Articles/What-is-open-circuit-voltage.php