Battery Internal Resistance

Read the Technical Bulletin

- The internal resistance (IR) of a battery is defined as the opposition to the flow of current within the battery.
- There are two basic components that impact the internal resistance of a battery; they are *electronic resistance* and *ionic resistance*. The electronic resistance plus the ionic resistance will be referred to as the **total effective resistance**.
- The *electronic resistance* encompasses the resistivity of the actual materials such as the metal covers and internal components; as well as, how well these materials make contact with each other.
- *Ionic resistance* is the resistance to current flow within the battery due to electrochemical factors which include electrolyte conductivity, ion mobility, and electrode surface area.

Calculation – dual pulse method

- This test involves placing a battery on a low background drain, allowing it to stabilize, and then pulsing it with a heavier load for 100 milliseconds.
- Using Ohm's Law, V=IxR, the total effective resistance is calculated by dividing the change in voltage by the change in current: R=ΔV / ΔI.