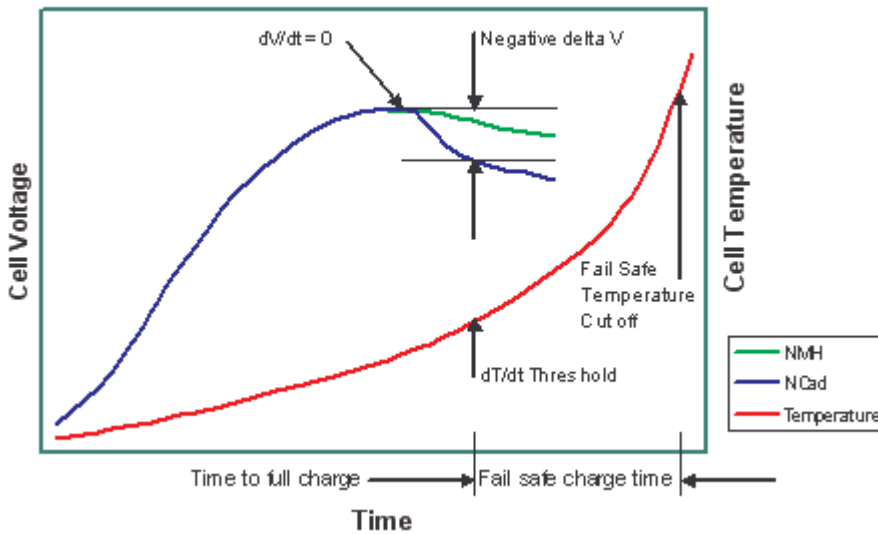


BATTERY CHARGING – DIFFERENCES BETWEEN NiMH/NiCd AND LiPo

NiCad & NiMH Charging Characteristics

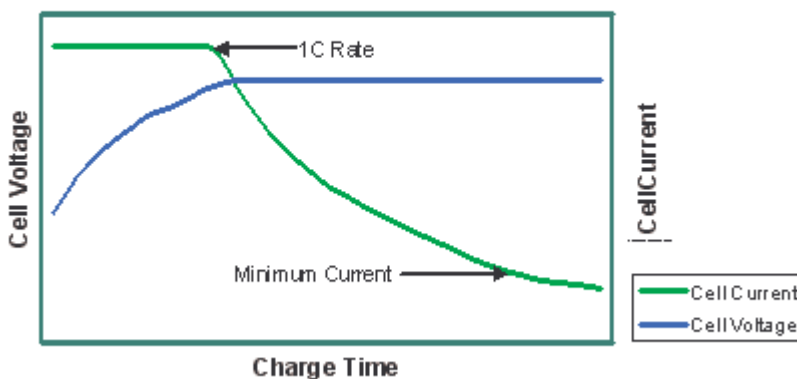


Constant Current

Constant current chargers vary the voltage they apply to the battery to maintain a constant current flow, switching off when the voltage reaches the level of a full charge. This design is usually used for **nickel-cadmium** (NiCd) and **nickel-metal hydride** (NiMH) cells or batteries.

If you look at the blue voltage line above, you can see the downward kink where the charge capacity of the battery has been reached. This is where the battery voltage, having risen steadily during the charge, suddenly drops and this is known as the Delta Peak. Most NiCd and NiMH chargers use this voltage drop to terminate their charge cycle and some allow you to set the exact threshold yourself, usually in the range of 5 – 20mV. Note that the voltage drop after the peak is much less pronounced with NiMH cells and chargers for this chemistry must be suitably sensitive to recognise this.

Lithium Ion Charging Characteristics



Constant Voltage

A constant voltage charger is basically a DC power supply which in its simplest form may consist of a step down transformer from the mains with a rectifier to provide the DC voltage to charge the battery. Such simple designs are often found in cheap car battery chargers. The lead-acid cells used for cars and backup power systems typically use constant voltage chargers. In addition, **lithium-ion** cells often use constant voltage systems, although these usually are more complex with added circuitry to protect both the batteries and the user safety.

The point to note on the above graph is how the charger has allowed the battery voltage to raise to a preset level, 4.2V per cell for LiPo, and then holds it steady. At this point, the amps being pumped into the battery are gradually reduced to zero, at which point the charge is terminated.