

Method and apparatus for charging batteries utilizing heterogeneous reaction kinetics

**Abstract**

A method and apparatus utilizing a new parameter for assessing battery charge acceptance for controlling the charging process of the battery. The charge acceptance parameter comprises a terminal voltage profile which is determined during a variation in a diagnostic current. The slope of the terminal voltage profile is used in the charging process to assess the charge acceptance ability of the battery and thereby control the charging current. For a first group of batteries including lead-acid and nickel-cadmium batteries, the terminal voltage profile is characterized by an increasing profile slope as the charge acceptance ability of the battery is reached. For a second group of batteries comprising nickel-metal hydride batteries, the terminal voltage profile is characterized by a profile slope which approaches zero as the charge acceptance ability of the battery is reached.

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