NASA TECH BRIEF

Goddard Space Flight Center

Method to Determine Vented Electrochemical Cell Quality

The problem:

There is no known method of determining the quality of a vented cell while it is being trickle charged.

The solution:

The cell mass is either measured periodically or monitored continuously to determine water loss and the rate of mass loss during the trickle charge period.

How it's done:

Through the use of inexpensive balances and clocks, cells or batteries can be monitored for quality while in a stand-by state for long periods of time. A balance with the greatest possible sensitivity should be used to insure sufficient accuracy of the measurement. The cell is placed on the balance and weighed and the time of the weighing noted. In this manner the rate of mass loss can be determined during the trickle charge. For every 2.98 ampere-hours of current used for electrolysis, one gram of water is lost. Thus, by measuring the weight loss, as a function of time, the fraction of the total trickle-charge current which goes to electrolysis can be determined. A certain amount of self-discharge is normal. If self-discharge is excessive or if the cell has a soft short, less current will be used for electrolysis and the rate of weight loss will be less. Thus, the greater the weight loss rate, the better the cell.

Note:

No additional information is available. Specific questions, however, may be directed to:

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Reference: B72-10396

Patent status:

No patent action is contemplated by NASA.

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