

Re: Li-Ion life cycle management

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2008-05/msg03133.html>

- *From:* Richard Henry <pomerado@xxxxxxxxxxx>
 - *Date:* Fri, 23 May 2008 07:35:35 -0700 (PDT)
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On May 22, 6:26 pm, rebel <m...@xxxxxxxxxxx> wrote:

On Thu, 22 May 2008 10:21:44 -0700 (PDT), Richard Henry <pomer...@xxxxxxxxxxx> wrote:

On May 22, 9:56 am, Joerg <notthisjoerg...@xxxxxxxxxxxxxxxxxxxxxxxx> wrote:

rebel wrote:

On Wed, 21 May 2008 13:08:58 -0700,
Joerg
<notthisjoerg...@xxxxxxxxxxxxxxxxxxxxxxxx>
wrote:

That might not be a cost effective application for Li-Ion. Isn't their self discharge alone a few percent per month?

No, our measurements place it around 0.1%/month.

Well, the data from Henry's link states "Self Discharge: < 4 % per Month". Quite a lot, actually. But he wrote that they'll be charged

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right before the event, so should not be a problem. Lack of storage capacity after a few year will be, though.

My experience with rechargeables is that there will be a reduction in capacity after many cycles (~hundreds). Is there a similar decline in capacity over time if they are not used much?

I have here a Li-Ion pack in an Acer (AcerNote Lite 370) laptop which is date-stamped week 37, 1996. It still delivers about 2/3rds of its initial run-time. What it DOESN'T do is live in the machine when AC power is used.

Considering the low number of cycles that your application is likely to rack up in say ten years (6 cycles per exercise x N exercises per year x 10 years) the deterioration will largely come from (a) initial build quality issues and (b) temperature issues. Temperature as the one you can control to some extent.

The effect is most probably best considered as the cumulative effect of elevated temp x time at elevated temp, If your storage temperature is sane (as is the case with my OLD Acer pack) I wouldn't foresee a dramatic capacity loss. – Hide quoted text –

– Show quoted text –

The customer already has a battery storage discipline – they are kept on chargers in an air-conditioned shelter. I guess some random testing of batteries that they have been keeping in storage for a while would be a good data point.

In use, the batteries are not shut up in the equipment but effectively hang out in the air, so the only temperature extremes they will experience will be daily weather variations and self-heating during discharge.