

NiCad batteries

I am very concerned about the Dick Smith Electronics advertisement for the NiCad cells, which appeared on page 78 of the June EA, and again in the company's insert in the July issue. The text contains statements and draws conclusions which are at variance with well known facts about these cells. I enclose copies of technical articles on NiCads which have appeared in EA, ETI and other publications, and have highlighted relevant portions.

It appears to me from studying the advertisement and a conversation I had with its author that he is not well informed on the subject of batteries and their applications.

Firstly, I consider the text of the ad to be very vague (e.g., figures are quoted without reference to cell type, size or brand). However, the general thrust is obvious and might be summarised as . . . "replace the dry batteries in your portable electronic equipment with NiCads and enjoy large savings in cost, improvements in performance and longer running time per charge than before." There are many well known problems with this proposition, making it doubtful advice at best. Taking the four paragraphs in order the objections are:

1. Four hundred plus charges *might* be obtained, but only under laboratory controlled test conditions. Series dis-

charge of unmatched cells and recharge before complete discharge will severely limit the life of a cell. This high cost of changeover to NiCads (\$50 to \$300 including charger/s) means a break-even point of about 50 to 100 cycles. In many cases this may not be reached, due to cells deteriorating. Also many users will find waiting 12 to 14 hours before re-use very inconvenient, necessitating purchase of a second set of cells so as to have a charged set on hand. More cost, hence longer to the break-even point.

2. The constant discharge voltage of a NiCad is not disputed and may be good in a few applications, BUT the *normal* terminal voltage of only 1.2 volts is very close (within 0.1 volt) to the *end* point voltage of a dry cell. Your torch or cassette player will perform as if it had nearly flat dry cells in it. Some equipment will barely work at the reduced voltage offered by NiCads.

3. The internal resistance of a NiCad is very low, allowing high discharge currents — sometimes dangerously high if the equipment was not designed for them. Stalled motors in toys can be burnt out, flash units may overheat and fail. (See National flash unit operating instructions). Accidental fires are likely if shorts occur inside equipment or to cells. A “C” size NiCad can deliver 100 amps plus if shorted.

4. The energy capacity (amp hours) of a NiCad is superior only to the poorest grade of dry cells. The figures in the Plessey brochure (quoted as a source by DSE) were obtained by comparing a

NiCad with a light duty dry cell, in a heavy duty situation. Arguing from a single example is logically erroneous.

I performed a 90mA discharge test on Eveready “Red” cells (as sold in Dick Smith stores) and found they lasted over 5 hours to 1.1 volts. The specifications for Eveready “Black” and Alkaline cells indicate 10 hours or more is to be expected. ANYONE considering investing in NiCads would have to be using their equipment regularly and heavily, and would be most unlikely to be using light duty dry cells. The example given in the ad is not typical, not explained (what dry cell?) and is therefore misleading.

There is a further misleading assertion in the text accompanying the “Multi-Cell Charger”, where it is claimed one can “properly” check a NiCad cell by measuring its voltage under load. This is nonsense. The paragraph 2 statement about constant voltage discharge means that the state of charge CANNOT be found by measuring the voltage under load. It is likely that users of this device will believe cells to be fully charged when they are not, and/or to overcharge only partly discharged cells. Either of these errors will shorten the life of a NiCad cell.

A charger design which overcomes this difficulty appeared in *Electronics Australia* in March this year.

I would hope that some form of correction or retraction appears shortly.

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