

This is to certify that



and its mini sensor (*used in conjunction with CC128/Envi/Classic
and Trec*) has a battery life of 3.9 years

It has complied with and taken part in testing by Intertek (report 09043162)

A blue ink signature of Martin Dix.

Signed:
Martin Dix, Managing Director, Current Cost

October 20th, 2009

Current Cost Technical Note, Predicted Battery Life

Intertek, the independent laboratory service, measured the Current Cost Sensor Unit battery consumption (see Report No. 09043162). They found that the average battery usage by two of the sensor samples that had the highest consumption was 3.53 amp-hours in one year. Current Cost notes that in fact the sensors operate at a lower average voltage than that tested, so the worst-case figure measured is on the side of caution and actual average consumption will be better than this.

The laboratory showed that standard 'C' and 'D' Alkaline cells from Duracell, Energizer and Kendal (as supplied by Current Cost) could meet the one year life required by the specification with great ease.

Alkaline 'D' cells are typically IEC rated between 13.5 amp-hours and 15 amp-hours when used for heavy duty draining over a few hours such as with torch bulbs. They deliver much more than that for a gradual drain spread over several years, such as the Current Cost sensor. However, there are no IEC tests which measure the amp-hours available over several years use. This is partly because tests would require seven or eight years to complete and results would arrive too late to support new battery cell sales, and partly because there are so many different ways to discharge a cell which affect the amp-hours (constant resistance, or constant current, or constant power, or these varying with time as the cell runs down), plus the effects of load duty cycle, seasonal, peak and average cell temperature, first year decay, subsequent years self discharge and shelf life chemical effects.

Current Cost have taken the cell manufacturers' specifications and performance graphs and calculated that up to 24 amp-hours is achievable with good quality alkaline 'D' cells under low drain conditions in a typical UK environment. So although a battery IEC rated and actually limited to 13.5 amp-hours (unlikely) would run the worst-case Current Cost sensor for more than 3.9 years, a similarly sized battery actually achieving 24 amp-hours with an average sensor unit would run for over 7 years.