Electric Charger

The battery charger is as essential to the electric challenge as petrol is to the internal combustion one. You can buy a charger but they can be expensive or you can put together a simple electronics project to make your own for less that £1.50p

A Charging circuit
Charging batteries from a 12volt car battery to the 4.8volt 4 cell battery pack is relatively straight forward.

The theory is as follows: -

The rating for the 4 cell battery is 13000mAh therefore to charge the battery in 1/2hr; the current flow has to be 2.6Amps. (1.3 x 2 = 2.6)
The circuit has to lose approx. 4.8V
The battery is 1.8volts per cell, 4 cells = 7.2V [12 – 4.8 = 7.2]
Therefore, using Ohms law.

V/I=R   7.2 / 2.6 = 2.77 Ohms

If we use two 1 Ohm resistors the power required is: V x I = W   (7.2x2.6= approx. 18Watts)

The resistors we recommend are rated at 25Watts so running this component at half its rating will ensure it doesn't heat up enough to burn. However if the battery is left on charge for extended periods, above the calculated 1/2hour, then the cells *will* get hot so this is not recommended. An aluminium clad wire-wound resistor, code 62-8106 from Rapid Electronics Ltd costs only £1.30.
We would recommend that you include an in-line fuse with the resistor, or on the negative wire, for safety reasons.

Fuse Holder

Fuse

Croc-clip

Resistor with aluminium cladding

We would also recommend that the whole circuit is mounted on a suitable plate such as an aluminium alloy with large croc clips connecting the 12volt car battery to the circuit. Care must be taken to ensure the wire is also thick enough to be rated to 3amps. The fuse can be approximately 5Amps.

12V Battery   Resistor   Fuse   4.8V Battery

Negative Wire