This page will be under continuous construction for 6 months. It will contain Lead Acid batteries and chargers, Lithium Batteries and chargers with pictures.

We will offer postal rebuilds for batteries and chargers. As many bikes as possible (and mobility scooters) will be listed with information on their battery types or we will supply batteries on their own.

**Electroped Electric Bike Batteries**

Electroped Leader = 3 x 12volt 12amp SLA @ £35 each = £105

Electroped No1 = 3 x 12volt 12amp SLA @ £35 each = £105

Electroped Roadstar = 3 x 12volt 12amp SLA @ £35 each = £105

**Powabyke Electric Bike Batteries**

3 x 12volt 12amp SLA @ £35 each = £105 for all lead acid based Powabyke’s
Currie Electric Bike Batteries

2 x 12volt 12amp SLA @ £35 each = £70 for all lead acid based Currie bikes.

Currie Electric Bike Kit Batteries

2 x 12volt 12amp SLA @ £35 each = £70 for all lead acid based Currie bikes.

Currie Tricruiser Tricycle

3 x 12volt 12amp SLA @ £35 each = £105

Europed Electric Bike Batteries

3 x 12volt 12amp SLA @ £35 each = £105 for all 36volt electric bikes.
Batteries

4 x 12volt 12amp SLA @ £35 each = £140 for all 48volt scooter based electric bikes.

Solartrack Electric Bike Batteries

3 x 12volt 12amp SLA @ £35 each = £105 for all 36volt electric bikes.

Batteries are electrochemical and they have their own personalities, few battery packs are identical in their behaviour. We have studied the theory behind batteries (this can keep you busy for a long long time) but the most useful information comes from testing of end users and all of that rich feedback we learn from and translate into the best services for our customers. The electric bike industry has been waiting for your interest to become significant enough to allow new things to happen.

Sealed Lead Acid (SLA)
Pros: medium energy density, maintenance free, tried and tested on electric bikes, cheap.
Cons: heavy, battery cells can age quickly and die, no fast charge option, no storage option.

Nickel (NiMh & NiCd)
Pros: medium energy density, fast charge the norm, medium weight, serviceable.
Cons: Need interval discharges and servicing, suffer from memory effect, performance radically reduced in cold weather, no storage option.

Lithium-ion (Li-ion) If any store tells you that their ebike battery 'is the latest technology' ask them what that means. It doesn't mean the chemistry itself so don't accept those as answers) and what that means to the performance of the machine. You need to discuss which Lithium chemistry suits your requirements the best, otherwise you may be disappointed.
This is where it gets really interesting from now and into the future and some basic knowledge is required for you to understand the role of the differing lithium chemistries.

**Geek bit:**

Energy is released when the ions (in this case lithium-ions Li?) move from the positive anode to the negative cathode. The exception to the above is Lithium Sulphur LiS which uses a lithium anode and a sulphur solvent as a cathode. Talk to us about which lithium chemistry is the best fit for your requirements.

**General**

**Pros:** Very lightweight, very high energy density, durable, no maintenance, fast charge, can be stored.

**Cons:** Expensive, can be unstable, cells charge and discharge at different rates.

**Lithium-Polymer (Li-Po)**

**Pros:** Lightest battery available, highest energy density, no maintenance, fast charge, proven high level of stability under extreme laboratory tests, flexible shape, low self discharge, can be stored if care taken, wide operational temperature range.

**Cons:** Most expensive, will suffer if incorrectly stored for a short time, can suffer thermal runaway and pose a fire hazard if charged after a period of incorrect storage or if the BMS has catastrophically failed, charging can be complicated.

**HOW TO GET THE BEST FROM YOUR BATTERY**

**SLA:** Like a car battery your lead acid battery takes a few cycles to get to peak performance, once there it should be left to run down at its normal discharge rate or exercise 'deep discharges'. The less full cycles you do the longer your SLA battery will last so top up when you can.

**Nickel:** NiCd and NiMh batteries are tremendously robust; they can deliver high amounts of current and can be 'exercised' back to their full charge with very high currents, this should be left to someone qualified for the task.

**Lithium:** No matter which type of exotic lithium chemistry is used the battery maintenance follows a simple rule: keep it charged. Reducing deep discharge cycles increase lifetime and performance over the lifetime.

If the battery will not be used for more than 4 weeks it should be stored at a storage voltage of approximately 40% of its operational voltage, e.g. a 36V battery should be stored at roughly 39V.

**THE FUTURE BATTERY**

Lithium batteries are the main focus for battery R&D; there are very good reasons for this such as: high energy density (energy/litre or Kg), low weight, flexibility of application, reduced internal resistance, longer life cycle etc.
High Energy Density/Low Weight: The honey pot of honey pots! A number of companies and universities around the world are ... Prof' Peter Bruce of the University of St Andrews in Scotland is one of the people claiming success in this area.

Fast Charging: Many companies have now demonstrated technology for rapidly charging batteries, especially lithium ... achieve this by eliminating graphite in the porous separator and using nano particles to absorb the lithium ions.

Long Life: a bonus of low internal resistance is that an increase in longevity occurs. Battery life spans are normally ... 20,000 cycles and Toshiba's has achieved 9,000. In the future you may well have to include your batteries in your will!

What exactly is an electric vehicle (EV) battery?

An electric vehicle battery is a high current battery. This is very different from most consumer electronics batteries. ... NOT test EV batteries by putting your tongue on the contacts! And do not short the terminals to see if you get a spark!)

Keep in mind that good EV batteries have enough energy to carry a 90 kg man over hill and dale for close to 20 miles. That is a LOT of energy!

A battery is not just one solid piece, but a collection of “cells”. The cells are one complete unit of anode, cathode and electrolyte that produce electricity from a chemical reaction in the cell. Each cell type (also called a cell’s “metallurgy”) has a nominal voltage. For example, NiMH (Nickel Metal Hydride) has 1.2 volts. How much energy? (1.2 volts x 1000 amp hours = 1200 watt volts. If you need 30 of them to get your required voltage, you still only have 7 Ah in usable energy – at that voltage.

To put this another way: More Amp Hours means you can go farther, at higher speeds and up bigger hills. But more Amp Hours in our experience you rarely get the Amp Hours stated out of the cheaper batteries. In fact you hardly ever get close.

Max current means essentially “How fast can the cell discharge energy?” Think of it as a can full of water. The can is ... hole) is not big enough, then the motor may not be able to get enough energy (the water) to function at max performance.

You could also think of the max current as “how big the fuel line is”.

Amp Hours are the most common way to describe the amount of electricity in the cells – and all that talk about “watt hours” makes no sense at all. To put this another way: More Amp Hours means you can go farther, at higher speeds and up bigger hills. But more Amp Hours in our experience you rarely get the Amp Hours stated out of the cheaper batteries. In fact you hardly ever get close.

Usually, when people ask about a battery’s capability, they want to know two big things:
  The amount of energy stored in the battery’s cells. (How far can I go?)
  At what rate the cells discharge electricity. (How much power and speed?)

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Some people will describe max current in terms of max amperage that the cell can endure and for how long. Another way is to describe it as C rate. An example is: If a battery can be discharged at a 10 amp draw and will last for one hour, then it is a 10Ah battery at 1C.

What are some problems with battery construction?
Most consumer electronics battery applications use a tiny handful of cells. For example, a cell phone battery could be made from a single 18650 cell. Large packages of cells also create heat problems. A cell buried inside of several layers of other cells has no way to easily shed heat during charging or discharging. Heat leads to failure, diminished performance, and longer charging times.

What are the solutions?
Each battery type has different capabilities, needs, and limitations. So, very careful engineering tailored to the type of battery being used is needed. There is a trade off in terms of cost, weight, capacity, system complexity, and safety involved in all battery engineering choices. All of these factors must be brought in line with one another to create a safe, sound solution.

A big part of preventing catastrophic failures (like the kind that burn down houses) is a “battery management system”. This is a complex system that monitors and controls the charging and discharging of a battery pack. Physically, this is a printed circuit board with a complex and often IC-controlled circuit.