

The Trial

Powacycle Windsor

Not quite a Lafree, but economical town transport

Peter Henshaw



Nothing stands still, especially in the world of electric bikes. Not so long ago, buyers who couldn't afford the £850+ asked for a basic Giant Lafree were faced with a huge choice of cheaper alternatives, all of them heavy, slow and relatively crude.

"...Using the twistgrip certainly draws power, but the effect is pretty subtle..."

That looks like changing, with a new breed of bikes in the £500-£600 range, of which Giant's own Suede is the most obvious example. And these cheaper bikes are getting better: the Suede is expected to be relaunched in 2007 with a freewheel in the motor, the lack of which was one of our biggest criticisms. None are as sophisticated as the purely pedelec Lafree, but the new generation all make use of Nickel-Metal Hydride (NiMH) batteries, which weigh about half as much as traditional lead-acids, and they are finally starting to come down in price as production volumes increase.

The Powacycle Windsor is one such, and at £499 appears to tick most of the right boxes. It's got a NiMH battery, aluminium step-through frame, smart black rims, V-brakes and a sturdy rack. And the bike weighs 23.7kg, slightly less than claimed, and lighter than almost anything except the basic Lafree. There's been a fairly obvious attempt to give it a Lafree sort of look, and in a chunky, less elegant way, they've succeeded. If there's a drawback, it's that the Windsor's battery is a relatively puny 192 watt/hours (the Ezee range, for example, offer 324 watt/hours) so it won't be burning any tarmac.

Stately Performance

Still, that's very much in keeping with the Windsor's appearance, which suggests genteel spotters to Thameside shops rather than pounding the mean streets of Bristol or London. Ladies who lunch will love it, but they might find the riding position a bit odd - the bottom bracket is mounted a couple of inches further back than usual, so your feet keep slipping forward on the pedals, though the wide, pull-back bars are comfy. The saddle is a large squishy item that feels quite pleasant at first, but gets to be a pain after a dozen miles or so.

Progress is stately. The Windsor, like many electric bikes, gives riders the choice of both pedelec (power comes in when you pedal) and twistgrip control, though in this case the throttle gives a power boost over and above pedelec mode. At least, that's the theory, and using the twistgrip certainly draws extra power, though the effect is pretty subtle. The motor is whisper-quiet, and the power delivery so gentle that one could be forgiven for forgetting that this bike has any power assistance at all.

That illusion was soon dispelled by riding into town without the battery, which made it clear that the Powacycle's motor is doing some useful work. But there's none of the playful thrustiness of an Ezee - it's more like having a gentle wind at your back all the time. That's all very nice, but don't expect to waft along at an effortless 15mph or more - the Powacycle motor has given its all by 13mph.

Despite this, it climbs hills surprisingly

A to B Fact File

POWACYCLE

Never heard of Powacycle? Neither had we until a few months ago. The company is part of Ultima Networks, which supplies computers and electronics and was set up in 1979. It seems the Chairman has an interest in green issues and alternative transport, and decided to import electric bikes after seeing them in use in China. The first bikes arrived in August last year and by November the company was specifying changes to the Chinese manufacturers. For example, the early batteries had kettle type three-pin sockets, so they could mistakenly have been connected directly to the mains; these have now been changed to small circular sockets. According to Wazz Mughal of Powacycle, the company sold 15,000 bikes in its first 12 months, and they're aiming at 20,000 in the next twelve, on a turnover of £1 million. Until now, most have been sold direct to the public, but a dealer network is being built up. As they say, watch this space...

“...A range of 25 miles isn’t at all bad... and miles better than Powacycle would have you believe...”

well, needing only light pedal assistance to keep up a steady 8-10mph on moderate inclines. The gears help, a cheapo Shimano 6-speed derailleur that offers a 37-73 inch range. That’s not bad, but, it would be nice to have a lower first when stuck with a flat batt in hilly country, and keen types will find that top gear runs out of cadence at 16-17mph.

In town, we tended to use the twistgrip just for pulling away, especially up hills, for which it comes in very useful. Pedelec power doesn’t come in until walking pace, so the twistgrip gives extra pulling away confidence from red lights and the like. As ever with the cruder type of pedelec sensor, power continues for a second or so after you stop pedalling, which can be alarming, if not dangerous, if you’re not ready for it.

Speaking of flat batteries, Powacycle claims a 13-17 mile range for the Windsor, ‘with gentle pedalling on a flat surface.’ As most range claims have as much to do with truth as Enron’s accounts department, that comes over as exceedingly modest. And it is. Starting out from Dorchester with a full battery, we made it to Sherborne (20.5 miles) with plenty of power left over. Admittedly the route included only a couple serious hills, our average was a leisurely 12.3mph and we did have a good strong tailwind, but even so... We were also only using the twistgrip on hills, which suggests that it is drawing power in practice.

Next morning, the 3-LED system finally flashed on to ‘Empty’ at 21.5 miles, and at 24.6 power became intermittent on the twistgrip - a bit like a moped running out of fuel, if you’ve ever experienced



Like the Lafree, the Windsor draws its styling from the classic ladies roadster. A comfortable position and decent luggage carrying ability

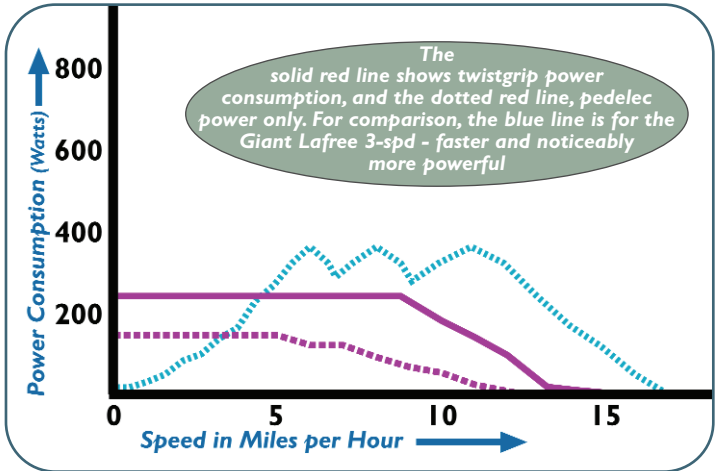
that - the pedelec following suit at 26.1. Professor Pivot tells us this intermittent power is due to a rather crude low voltage cut out, which cuts in again immediately as the voltage rises. This cycling on and off is apparently bad for both electronics and battery, so at the first sign of this, it's best to switch off the electrics and rely on pedal power alone.

“a genuine battery capacity of around 190 watt/hours, which is even more amazing...”

A range of close on 25 miles isn't at all bad for such a small battery, and miles better than Powacycle would have you believe. But just to be sure, we gave it a tougher test the following day, an 18-mile round trip, with some serious hills and the sort of wind that's always a. Despite using the full twistgrip power wherever possible, we only averaged

11.9mph, and the trip almost flattened the battery. But the range was still better than Powacycle would have you believe, with the Empty light staying on at 18.5 miles, and the cut-out cutting-in a mile later.

One interesting point is that the power didn't get noticeably more feeble when the battery was low, and the first warning sign (you can't see the three LEDs from the saddle) was that intermittent running. In any case, the three LED display is less than informative, the 'Full' light disappearing within a couple of miles. Powacycle claim a 4-6 hour charge time, which seems optimistic when you see the size of the diddy charger. This gets quite hot, though it managed a full recharge in 5 hours 10mins. Unusually, this is bang in the middle of the importer's claim, and suggests a genuine battery capacity of around 190 watt/hours, which is even more amazing.



The Bicycle

As a bicycle, the Windsor is quite pleasant, with its relaxed riding position (we got used to the backwards bottom bracket after a while). There isn't enough saddle adjustment (86-96cm) for six-footers, though the handlebars can be swivelled between 94-99cm, and the Windsor is physically bigger than all but the biggest Lafree.

It's very stable too, even at 38mph down a long steep hill, and the 6-speed derailleur might be cheap, but it works well enough. The cheap V-brakes are what you'd expect, and once again, they do the job without any great finesse, but what really concerned us were

the suspension forks. As forks, they soak up the bumps quite well, and are especially good at wafting over speed humps.

But those on the test bike had an alarming amount of play. Peel back the loose fitting gaiter, and you can see just how bad a fit the plastic bush is in the fork. They judder badly under heavy braking, and if bicycles had to pass an MOT, these would have

brought an instant failure.

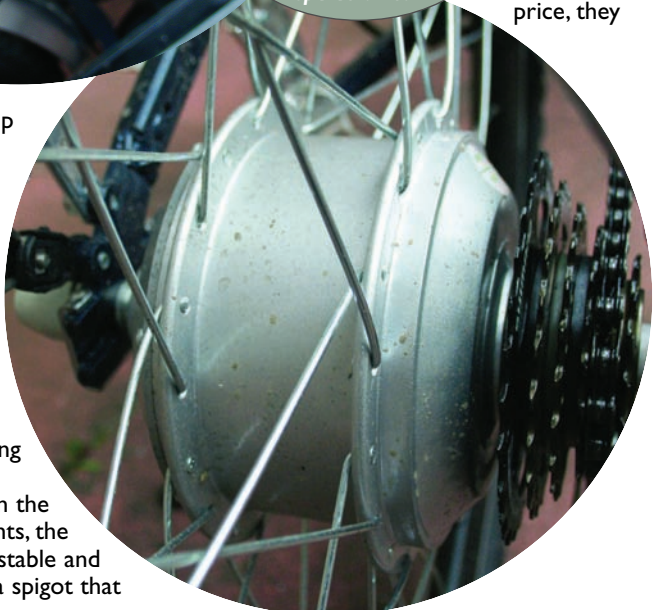
If it's not possible to supply decent suspension forks at the price, they



LEFT:
As on the Lafree, the NiMH battery lives behind the seat pillar. Note the key switch and 'fuel gauge' on top of the battery.
BELOW: The motor sits alongside a basic 6-spd derailleur

shouldn't be there at all. Ordinary forks would be stronger and could save up to a kilogram, in a market where weight competition has become very keen.

The rest of the Windsor's equipment tells a happier tale. The rear rack looks strong, and doesn't come with bungees but has plenty of hook points, there's a useful kickstand, a proper bell, a chainguard, full mudguards and chunky looking Kenda 26 x 1.75 tyres, which seemed to roll along well. On the other hand, you don't get lights, the brake levers aren't span-adjustable and the battery lock consists of a spigot that



pokes through a hole in the plastic battery casing, which doesn't inspire much confidence. The battery is easy to slide in and out, unlike some we could mention, and one nice point is that Powacycle offer a second battery for a very reasonable £99. At that price (and given that the battery weighs only 3.4kg) it would be worth making this a two-battery bike, with a theoretical range of 50-odd miles.

The low purchase price, reasonable range and economical battery replacement combine to give running costs of 4.8p per mile - the lowest we've measured in ten years of electric bike testing. That's very significant.

Verdict

There's no doubt that the Windsor is slower and less sophisticated than an Ezee or the now defunct Lafree. We proved this the hard way when we allowed 20 minutes to reach a remote station - a schedule that should have been easy for an electric bike - and missed the train by a full five minutes. But at £499 ready to roll, the Windsor is a real step forward from the old lead-acid dinosaurs of the past, making NiMH light weight technology genuinely affordable. Of course, the price is reflected in the componentry (especially those forks) but it should make electric bikes more accessible to more people, which has to be good news for all of us.

Specification

Powacycle Windsor £499 . **Weight** *Bicycle* 21kg *Battery* 3.7kg . **Total 24.7kg (54lbs)** . **Gears** Shimano SIS 6-spd **derailleur** . **Ratios** 37"-73" . **Wheelbase** 117cm . **Batteries** NiMH **Capacity** 192Wh . **Spare battery** £99 . **Range** 19.5 miles . **Full charge** 5hrs 10mins **Fuel Consumption** *Overall* 11.5Wh/mile . **Running Costs** 4.8p per mile . **Manufacturer** Powacycle tel 01279 821243 web www.powacycle.co.uk mail info@powacycle.co.uk

