

26 Jan-8 Feb 2009
3000km/14days

eZeebike Katima to Cape Ride

By Rupert Nanni



When I first mentioned the idea to James Swift, the ezeebike distributor in South Africa, I got the same reaction as from most people. "You're mad!" But he didn't stop there. He spoke to Wai Won Ching, the head of ezeebikes in Shanghai, and together they said "You're mad, but let's do it. We've got just the bike for the job". Ching even said he'd

ride with me and so it started.

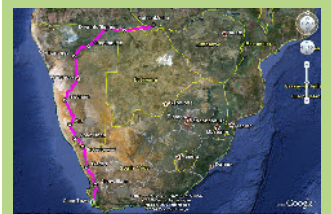
The idea behind it was to show off electric bikes to the public and prove that ezeebikes are one of the most reliable, low cost forms of transport. If the bikes could go through what I had planned for them, then they wouldn't break a sweat pottering around town. I put together a route that would be long, hot, wet, dusty, bumpy and included tar and gravel sections. Distances varied each day depending on the terrain and I tried to alternate hard days with recovery days. In practice this didn't always work, and in fact the shortest day of the whole trip turned out to be one of the most difficult.

The bikes we were going to use were the eZee Torqs, a hybrid bike with 28 inch wheels best suited to the varied terrain. A 37V 10Ah

lithium polymer battery powers a brushless electric motor in the front hub, and connecting batteries in parallel would give us the range needed to do the long distances. We also added a Cycle Analyst computer to each bike to monitor closely the condition of the batteries, and changed the standard 250rpm motor to a 300rpm version. This would allow us to travel at higher speeds, but at the expense of some torque. The standard throttle was replaced with ezee's cruise control dial to prevent wrist fatigue. All this adds up to a hefty piece of machinery, especially when carrying up to four litres of water, food, tools etc. A backup car was therefore used to carry all our overnight equipment and to supply fresh batteries, which we usually needed once or twice a day.

We set off from Katima Mulilo on the banks of the

Starting in the north eastern Namibian town of Katima Mulilo, the route crossed the Caprivi Strip before turning south at Rundu, and heading towards Windhoek. Here the tar ends as you traverse and then descend from the central plateau into the Namib Desert. High temperatures, dust and gravel roads characterise this section. Passing Sossusvlei, the riders went to Rosh Pinah and followed the Orange River, before crossing into South Africa. A straight run south through Garies and Clanwilliam saw them finish in CapeTown, 3000km and 14 days later after averaging more than 200km per day.





Zambezi River in the early hours of the morning, with 312km ahead of us. This area is relatively flat so a 300km+ day was one of the goals we had set ourselves and it was completed it in just under ten hours with two battery changes. The first couple of days through the Caprivi Strip were all long tar hauls with little traffic but lots of wildlife. During one thunderstorm we rode into a group of elephants who were as surprised to see us as we were to see them. Luckily they scattered into the bush.

Riding a bicycle at speed gives you a new appreciation for wind resistance and we had lots of time to test different theories. On certain days, we would find that increasing speed from 32km/hr to 38km/hr would double battery consumption (with the same amount of leg effort) for a mere 6km/hr increase. Headwinds which plagued us most of the way to Cape Town were the biggest challenge, mentally and physically. There were the odd tailwind days though, and one of these allowed us to do 202km at an average of 38km/hr!

As we neared Windhoek the traffic increased and the final 100km into the Namibian capital was very stressful. We were witnessing Africa's intolerance for cycling first hand. On several occasions we were driven off the road, some people even stabbing their fingers into their temples in the universal sign for madness.

The second leg of the trip was the dirt road sections through the Namib Desert. I must confess I was a little nervous about this. I'd done some off road testing over Christmas, but never with a bike this loaded, and never through loose gravel and sand. After a couple of kilometres though, I started to get the feel of the bike, and used carefully, it was a lot of fun. We had on the standard Schwalbe Marathon Plus tyres which are designed for trekking. Although narrow and lacking any knobbles, they performed extremely well and finished the trip with only a puncture in Chings front wheel.



The Namib turned out to be a highlight of the whole ride. It was extremely hot but provided you kept moving and drinking, you were fine. In fact riding wasn't hot but stopping was. The gravel roads varied from very good to pure mountain bike



Still miles to go south west of Windhoek

territory, and cycling down Spreetshoogte Pass at sunrise must surely rate as one of the worlds best rides. Once on the flat lands below, the shimmering road stretched straight to the horizon, and when you got there, it did it again. Probably the biggest challenge were sand traps in river beds which are generally too small to bother building a bridge over. In the Namib they're dry except immediately after the rains, and hitting these at speed made for some heart stopping moments. I found that with the correct use of power to the front wheel and a high cadence at the back, you could power through in full two wheel drive.



The Namibrand Nature Reserve

Corrugations were the worst though. Occasionally they would cover the full width of the road and you got rattled to a halt. Amazingly, the bike showed no signs of any damage. Again wildlife was plentiful, even in the desert, and we saw springbok, gemsbok, kudu, steenbok, zebra, jackal, scrub hare, kori bustard, ground squirrels, cobra and ostrich.

The Orange River forms the border between Namibia and South Africa, and cuts through the Richterveld and Ais Ais National Parks. It's a mountainous desert and the barren hills on either side of the river act as reflectors, building up a fearsome heat during the day. We recorded 42 degrees, but it got hotter than this when we turned away from the river and

Day	Distance (km)	Avg Speed (km/hr)	Time (hr:min)	Ascent (m)	Amp Hours	Wh/km	Watt-hrs	Km/battery
1	312	32.5	9:53	220	43.9	5	1619	62
2	200	29.3	6:41	335	35.9	6.5	1319	50
3	266	30.3	8:45	435	68.8	9.6	2471	38
4	202	38.3	5:22	490	56.6	10.1	2039	34
5	260	31	8:35	731	65.4	9.6	2414	37
6	169	24.8	7:07	790	34.1	7.4	1260	42
7	137	22.3	6:39	303	27.5	7.5	1031	46
8	145	16	8:08	776	34.1	8.8	1266	36
9	208	22.6	9:20	1610	55.7	10.2	2037	35
10	168	35	4:53	447	42	9.6	1560	34
11	146	21.8	6:54	890	31.1	7.8	1155	37
12	247	29	8:34	1524	59.4	8.8	2201	41
13	224	32.3	7:12	803	37.8	6.5	1429	56
14	229	30.8	7:05	2154	54.5	9	1984	37
Avg		28.3				8.3		41.8
TOTAL	2913		105:13	11508	646.8		23786	

Average speed on tar - 32km/hr. Average speed on gravel - 21.5km/hr.

Standard Model Torq	
Controls	Tri-modal: throttle power-on-demand (or eZee Assist Factor Dial), pedelec, pedal-only
Weight	Bicycle 22 kg Li Battery 3.1 kg Total 25.1 kg
Battery	37V 10 Ah Lithium with battery management circuit. Battery can be removed for or left locked securely on the bike
Charger	Automatic Smart charger, maximum charge time 5 hours
Controller	PWM microprocessor and LED self-diagnostic system. Overload protection 20 amps, Low voltage protection 31.5V
Rated power	250 Watts nominal power output
Rated current	5 Amps
Range	Up to 60km
Frame	Road bike All alloy 6061 T4 T6
Tyres	Schwalbe marathon 700C x 38 (28 x 1.5") with Smartguard puncture prevention
Rim	Weinmann (Rigida) CNC alloy twin wall
Gears	Shimano Nexave 8 speed 11-33T with Tap Fire shifters

climbed over a spur. At one point, the slight tail breeze was blowing at the same speed as our movement, leaving us in still air. Chings bike cut out when the controller overheated so I suggested we walk to the top to let it cool down, but he was having none of it. He thought that his cunning little commuter was above walking up a hill, so he grabbed my water bottle and squirted his controller. A minute later he was off, shouting "Use the powaaaaa. Electric powaaaaa".

People often ask how much help you get from one of these bikes and that depends on how much effort you put in. I have come from a mountain biking background and I tend to pedal the ezeebike the same as I do a normal bike. The only difference



Some easy, some not so easy

is that with electrical assistance you go faster. Climbing hills is where the big gains are made and these can be done at double the speed that I'm used to.

Back in South Africa and on the tar once again, we had our minds now on Cape Town, but were in for a rude surprise. We had the first real hills of the trip. Lots of them, and together with the heat, burning sun, traffic and headwind made the 247km to Garies one of the toughest days of all. The last 60km felt like 200.

On reaching Cape Town we did a detour to Bloubergstrand to jump on the beach. We'd done it! The finish at Canal Walk was a big surprise with a good crowd to welcome us home. The ride had obviously generated a lot of interest in South Africa.

The Torqs proved to be incredibly reliable. They had ridden through several thunderstorms, been subject to almost impossible heat, run at maximum power for hours on end, almost rattled to death on corrugations and even in Chings case crashed a couple of times, yet they ran to the finish as smoothly and quietly as they had started. All we did was oil the chains and lower the tyre pressure for the dirt. We had ventured into true 4x4 territory and covered distances that would be impossible on a normal bike.

Looking at the stats, my lowest Wh/km figure was on the first day. Although this was the longest, I knew that the overnight stop had limited generator power, so I'd used a lot of leg effort to keep some batteries for the next day. The average of 42km per battery across varied terrain was very good, considering we were not riding for economy. Back at home with a single battery and no luggage, I averaged between 60 and 70km when ridden economically. And the best part of all, adding a 20% loss through the charger, the "fuel" bill for my bike was R15.98 at Eskom rates of 56c/kWh. The rates vary, but even if you double that, it surely makes electric bikes the most efficient way of getting around!



Wai Won Ching, the founder of eZeebikes has "Treat the earth well" as his company motto. He is committed to low carbon transport and has ridden the Silk Route through China to promote the use of electric bikes.



Rupert Nanni, a keen environmentalist, trail guide and cyclist has travelled extensively through Africa by bicycle. He currently lives in Johannesburg where he uses an electric bike to get around.