

ALT-GREEN | 22 December 2014

Trefecta e-bike is a pedal for plutocrats

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(Trefecta Mobility)

Despite material costs often pushing their prices well past any claims to “revolutionise transport”, electric bicycles are typically not marketed as luxury items. Good thing the Trefecta is not typical.

Considering its makers will offer it for around \$28,000 beginning in February 2015, the e-bike is either an act of extreme hubris or a bold attempt to redefine the category.

The Trefecta is the brainchild of a team of Dutch, Swiss and German aerospace and automotive technicians, and its specs read like an engineer’s Christmas list. It starts with a body machined from aircraft-grade aluminium. Carbon-fibre wheels outfitted with tires from downhill-racing bicycles spin at the end of a front fork with 7in of suspension, adjustable on the handlebars or via the smartphone app. Rear suspension is similarly stout, with a floating drivetrain that tautly links motor and wheel. That dedicated app (Apple iOS only, linked via wifi) not only controls the suspension, but adjusts torque to the drive wheel, tweaks power-to-efficiency ratios and even lets the rider flip-proof the bike by setting a maximum climb angle, as measured by a 3D accelerometer in the front fork. Data such as speed, distance, range, mode, gear and battery life are also on view, either on the rider’s frame-nested smartphone or a built-in LCD display. While riding, most adjustments can be made with fly-by-wire handlebar controls. Low-energy Bluetooth enables a keyless start system and alarm.



(Trefecta Mobility)

The "Pedelec" system (a contraction of "pedal" and "electric") senses torque and RPM to mesh human and electric power, controlling the electric drive through a patented two-speed Smesh transmission, as well as automatically shifting through the 14 human-powered speeds. There is a throttle in the handlebars, but it is overridden by force on the pedals. Top speed, motor-driven, is a claimed 43mph.

The Trefecta sports hydraulic disc brakes front and rear, but they are not the primary source of stopping power. Instead, sensors in the brake levers slow the motor and kick in regenerative braking, which also charges the bike's battery – an interchangeable lithium-ion unit that offers more than 60 miles of range over mixed terrain.

That aluminium frame is foldable, and the wheels are quick-release, enabling the bike to fold up into a cube under 4ft square and 2ft wide. A custom case is under development, for easy transport into the cargo hold of a jet or yacht. Two models, the off-roading DRT and the city-centric URB, will come in several performance levels.

These spectacular specs – and some admittedly smart styling – are embodied by what its makers call the world's first high-performance e-bike, one that can not only take a rider up a 40-degree rocky slope but conquer the top of the market with ease.

Then again, it's worth wondering who might be waiting there when the Trefecta arrives.



(Trefecta Mobility)

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