

Test Report 2007



Assistance Factor and Mountain Range in Kirchheim/Teck

A worldwide unique test with live test rides over two different test routes and with the latest measuring equipment. Conducted by Frieder Herb and Kerstin Bunte, ExtraEnergy.

Battery

- Charge-discharge cycling: Charge with original charger, discharge with electronically controlled discharger.
- Solder measuring cable onto the battery cells to measure electricity flow during the test.

Bicycle

Each test bike was equipped with the following:

- Handlebar bag with tools and an on-board data collector and transformer
- Palm-Computer for recording speed, pedaling rate, and pedaling power
- Special pedals to measure the exact amount of the rider's muscle power. The data was transferred via radio to the on-board computer

- Sensors to measure pedaling rate and speed
- Cycloport Hack-4 for pulse measuring

Further steps:

- Calibrate pedals with a comparison weight
- Attach cables
- Check tire pressure
- Set the Palm-computer for the corresponding wheel circumference



Riding Tests

Everyday Track

The 5 mile long route in Kirchheim/Teck is mostly flat and has a short incline up to 8%; this is where motor assistance factor was measured.

Mountain Track

The 1/3 miles long route begins with an 8% incline and then decreases into a 7 % incline. Here, assistance factor and mountain range were measured.

Measuring Assistance Factor

Formula developed to calculate the assistance factor:

$$ub(v_{ped}, mL_{ped}) := \frac{1}{\frac{mL_{ped}}{38.686 \cdot v_{ped} - 76.972}} - 1$$

$$ue(v_{ped}, mL_{ped}) := \frac{1}{\frac{mL_{ped}}{1.049 \cdot v_{ped}^2 - 25.132 \cdot v_{ped} + 238.42}} - 1$$

Glossar

Abbreviations based on German explanations:

- ub** Assistance factor on hills
- ue** Assistance factor on the flat
- vpe** Speed of pedelec/e-bike in kilometers per hour (km/h)
- lpe** Rider's muscle power on pedelec/e-bike in Watts (w)

Measuring Mountain Range

On the mountain track, riders rode uphill until the battery was empty (downhill the riders coasted).

Evaluation

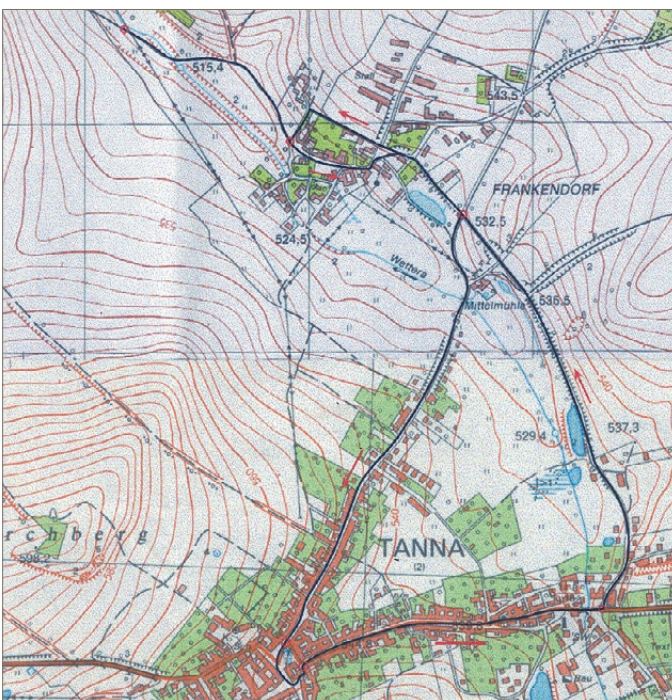
After each test was completed, the data (speed, power and pedaling rate) were downloaded from the Palm-computer to a PC, and evaluated.



The Daily Rider Test in Tanna, Thüringen

Six test riders aged between 26 and 52 years old rode the pedelecs and e-bikes over the test track through the city of Tanna and the surrounding countryside. They rode several thousand kilometers during the test period.

Teststrecke



The test route through Tanna city and the surrounding countryside is 7.8 km (4.8 mi) long. The course includes smooth and rough riding surfaces as well as small hills up to 6% grade.

In order to simulate the everyday use of a pedelec a little better, the test riders stopped at three different places during each round. Five test riders rode each bike over the set track until the battery was empty. They chose the motor assistance mode they liked best; uphill most of them preferred the highest assistance possible.

Test Track Tanna: 4.8 miles km through Tanna City and surrounding countryside



The Tanna Test Team (medium pict, left to right): Klaus Springer (*test rides*) · Hannes Neupert (*management test and exhibition, test rides, test reports*)
Anette Rauh (*test rides*) · Martin Springer (*test rides, maintenance*) · Heike Zschächner (*test rides*)
Daniel Hoppe (*test rides*)

Others not included in the photograph: Susanne Brusch (*texts, web presentation, photos*) · aktiv Radfahren (*product photos*)
Moritz Grünke (*graphic design test reports & displays*) · Patrick Knappick (*construction of displays*)
Sebastian Müllauer (*design and construction management of exhibition displays*)



Lafree Twist 1.0 by Giant

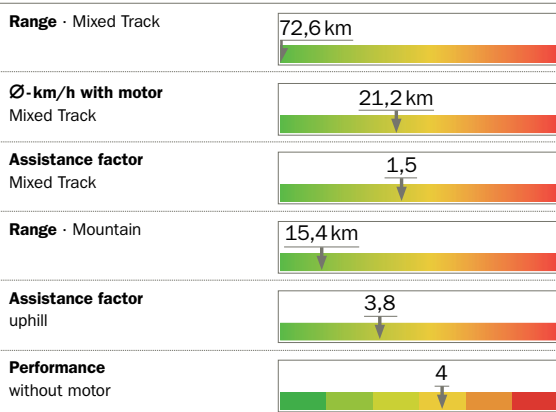
With the "Lafree Twist 1.0" Giant took a city bike with touring capability to the market and transformed the topic of distance.

Unbelievable: the "Twist 1.0" went exactly 72,6 km—ExtraEnergy's highest ever measured distance! For a city bike it is clearly more than one would need, one could easily go touring! With even motor use, distances over 100 km are possible. In the everyday usage it would therefore make complete sense to leave the second battery at home. In this case, one would save 3,3 kg, thus decreasing the bike's overall weight to 28,7 kg. The remaining 36,3 km range should be more than enough for most stretches and several everyday errands. ExtraEnergy requests from the manufacturers a stronger frame, and an optional version with only one battery. These suggestions will be met by Giant with new variations coming in March, 2008. But already today, with the "Twist 1.0", Giant has put forth a great product worth the money.

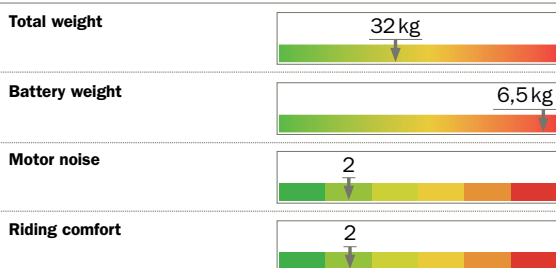


- + Extremely long distance and also strong hill climbing support
- With large and heavy riders the frame feels wobbly
- While riding with the motor disengaged it always breaks a little.

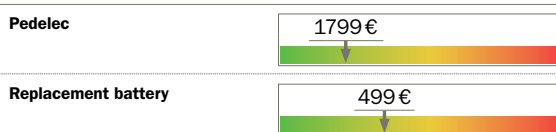
Riding Performance



Specifications and Ratings



Price



Address

Giant Deutschland GmbH
Mettmanner Str. 25
40699 Erkrath (Germany)
Tel: +49(0)211998940
info@giant-bikes.de · www.giant-bicycles.com

Components / Accessories

Good bike components, Shimano 8-Speed hub-gear-system, front and back rim breaks, additional back-peddalling break, installed U-Lock, air pump, front light draws from motor battery, separate battery charger, LG lithium-ion battery with one year guarantee.



The batteries are installed on the sides of the carrier rack; the installation requires some getting used to. · The Sanyo hub motor is surprisingly powerful although it is hardly bigger than a hub dynamo.



- 1 The Twist Comfort CS lite is the successor of the tested Twist 1.0. It has a stronger frame and a more stable fork, as well as more practical larger saddle bags. It is equipped with one battery which make it lighter without losing the capability for a second optional battery for longer tours. Price performance wise it is a superior offer for €1,400.
- 2 The Twist Sport CS is equipped with a double battery for the highest range. €1,899.90
- 3 The CS lite model with only one battery is offered for €1,499.90



ALU Touring by Sachs Bikes

ALU Touring is recommended because of its high tested range and good price-performance ratio. It lives up to its name as being ideal for low impact long bike tours.

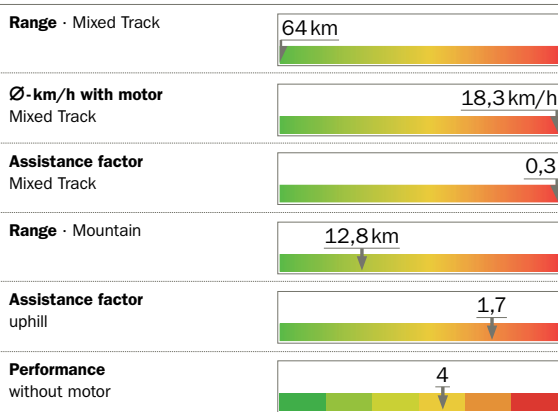
The combination of high battery capacity and low support factor contributes to its long range. The optional battery bag for its right side can double the range.

However, the test team could have done with less range and weight in order to gain more support instead. It takes some time to get used to the fact that due to its system the bottom bracket centre has too much play.

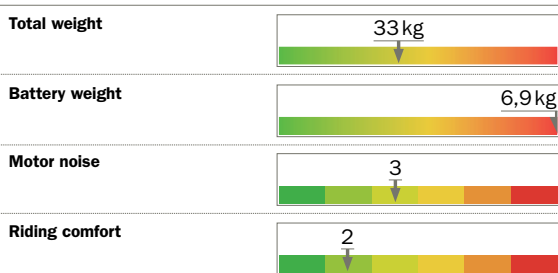
ALU-Touring excels in good craftsmanship and nice detail solutions.

- + Very high range which can be doubled by an optional second battery
 - + Accurate battery capacity indicator
 - + Energy recuperation when braking
-
- High battery weight
 - Riders with large feet might hit the dynamo with their shoes while pedaling

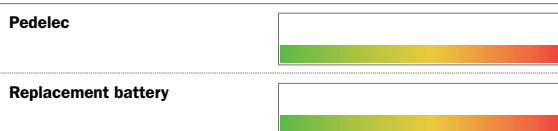
Riding Performance



Specifications and Ratings



Price



Address **Sachs Fahrzeug- & Motorentechnik GmbH**
 Strawinskystraße 27 b
 90455 Nürnberg (Germany)
 Tel: +49(0)91 14 23 10
 info@sachs-bikes.de · www.sachs-bikes.de

Components / Accessories

Quality bicycle components, Shimano gear shift, front rim brake, coaster brake, U-lock, no air-pump, dynamo light, separate charger, NiMhd battery, good user manual, 2 years warranty, frame size: 48 cm



Convenient: the charger can be placed in the saddle bag above the battery. Solid Scram hub gear shift, Sanyo Motor, and torque sensor.



- 1 Next generation Alu-Electra first shown on the test track at Eurobike 2007 planned retail prize €1,500. Technically it does not have much in common with the tested model.
- 2 Exclusive custom made bike: Electric Glider, price and delivery times on request



- + very high range with good motor assistance
- + Quiet motor and energy recuperation while riding downhill
- Battery capacity indicator at the throttle is inaccurate
- The battery is built into the main frame and cannot be removed for recharging

Riding Performance

Range · Mixed Track	63 km
Ø-km/h with motor Mixed Track	19,7 km/h
Assistance factor Mixed Track	0,9
Range · Mountain	11,2 km
Assistance factor uphill	2,9
Performance without motor	4

Specifications and Ratings

Total weight	34,9 kg
Battery weight	
Motor noise	2
Riding comfort	2

Price

Pedelec	€1,850
Replacement battery	€ 450

Address

bvba Euromoto
St-Amandse Steenweg 218
B-2880 Bornhem (Belgium)
Tel: +32 38 99 28 79
binbike@euromoto.be · www.binbike.com

BinBike by bvba Euromoto

Recommended because of its long range and good motor assistance. BinBike is ideal for expanded bike tours with good motor assistance.

Thanks to its silent yet powerful drive, Binbike lets you glide along beautifully. The combination of range and good assistance factor is excellent. With this pedelec in every-day life there is no need to worry whether the batteries will last until you get home.

Nevertheless, its long range comes with high overall weight. As the battery cannot be removed, the user should own a frost-free parking area with electricity.

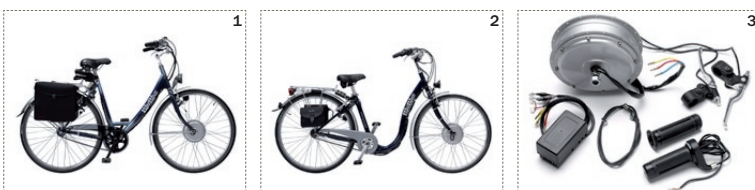
The 28 inch wheel has been tested to be very pleasant for big and heavy persons.

Components / Accessories

Quality bicycle components, Shimano gear shift, rim brakes, U-lock, air-pump, batterylight, separate charger, NiMhd battery, missing user manual, just frame size: 54 cm with 26 and 28 Zoll wheelsize, 1 year warranty



Throttle with built-in LED capacity indicator although voltage-based indication is inaccurate. · The main on/off switch located on the rear carrier is easily forgotten – this could be improved with an automatic off switch.



- 1 BinBike Custom €1,660
- 2 BinBike Low Step €1,600 24 volt · €1,735 36 volt version
- 3 BinBike also offers the motor kit as pedal first for €380 and direct start kit at €395



Easy Glider by Koninklijke Gazelle

All of the fantastic details of Easy Glider fit together into one harmonious whole.

Truely regal is how you feel on Easy Glider by Gazelle, the renowned dutch manufacturer. For beautifully relaxed rides in every-day life. Handlebar and saddle position are easily adjustable without tools. The front light has a twilight switch and goes on and off when needed, irrespective of the battery. The key to the solid U-lock also fits the battery lock. The price-performance ratio is convincing, especially because of the spare battery's very fair price, unlike other manufacturers, who charge twice as much for the same.

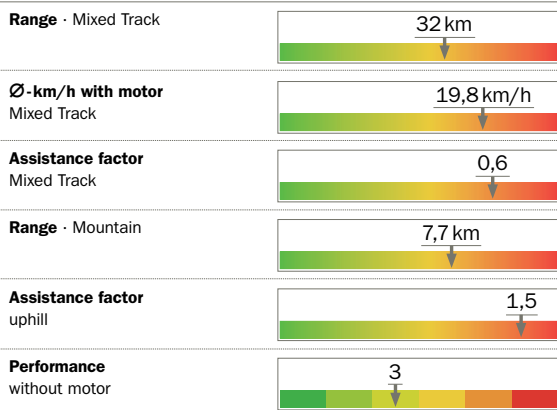
The overall positive impression could not be diminished by the fact that uphill riding was rather slow, the ride was always very comfortable.



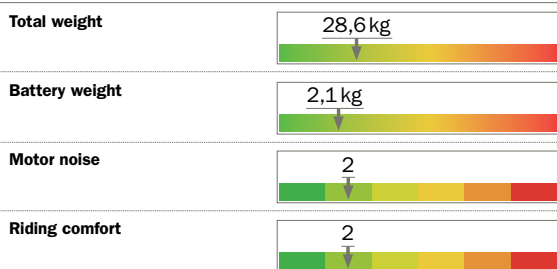
- + Very comfortable to ride
- + Well-equipped in every detail

- Low assistance factor uphill

Riding Performance



Specifications and Ratings



Price



Address

Gazelle GmbH

Grenzwaldstrasse 55

41334 Nettetal 2

Kaldenkirchen (Germany)

Tel: +49(0) 21 57 42 20 · y.oezel@gazelle.de · www.gazelle.de

Components / Accessories

High-quality bicycle components, Shimano 8-speed gear shift, hub brakes, U-lock, air-pump, hub dynamo light in the front, light off the battery in the rear, light with twilight sensor, separate charger, lithium battery, no user manual, frame sizes: step-through 49, 53, 57 cm; man's frame: 57 cm



Comfortable handlebar with details of perfect design and high functionality
The solid extra long kick-stand ensures a secure stand



1 is also available in a men's version with frame-sizes up to 57 cm
2+3 Gazelle's new independently developed Innenergy system will be offered in 2008. It is here showcased on the Orange product-line model for € 1,949.



Flyer by FLYER Biketec AG

With Flyer T8, Biketec has set new boundaries for today's technology.

The sporty appearance is not misleading, this bike feels like a good 28 inch trekking-bike with wings attached.

Biketec has combined the latest Panasonic drive engineering with a Shimano 8-speed hub gear; they have also developed an electronic circuit for the light, which provides light even after turning off the engine.

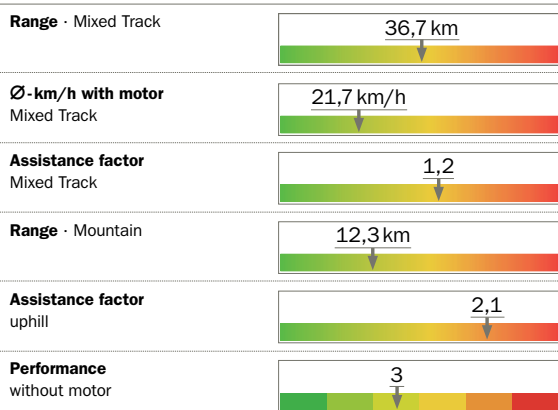
Our advice: If you are looking for something with similar engineering but feel intimidated by the price, take a closer look at the models from the C-series starting from €1,000 or less.



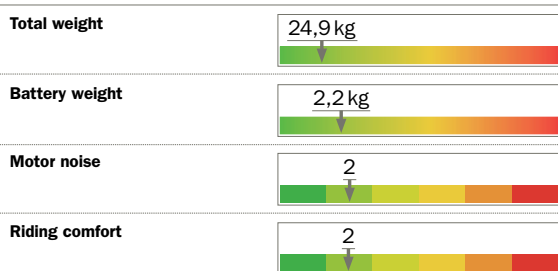
- + Light weight provides easy riding even without motor
- + Very high-quality and comfortable equipment

- Pedals slippery when wet
- No light without battery

Riding Performance



Specifications and Ratings



Price



Address

FLYER Biketec AG
Industrie Neuhof 9
CH-3422 Kirchberg (Swiss)
Tel: +41 34 448 60 60
info@flyer.ch · www.flyer.ch

Components / Accessories

High-quality bicycle components, Shimano 8-speed gear shift, hub brakes, U-lock, air-pump, light draws from battery, separate charger, lithium battery, 2 years battery warranty, easy-to-use user manual, frame sizes: 41, 45, 50, 55 cm; cruiser style also 60 cm



The elite is gathered here: Speedlifter, Shimano 8-shift hub gear and electronic operation unit with built-in capacity indicator. The latest electric drive from Panasonic employs a small battery with big capacity.



- 1 FLYER Tandem
- 2 New and brave the K series with a carbon frame.
Offered up from Spring 2008 for €4,490
- 3 The S series assists up to 45 km/h, best of all, it is not only street legal in Switzerland, but all over Europe.



Helkama Jubilee by Helkama Velox Oy

With pleasant simplicity, the Helkama Jubilee provides an easy and relaxing ride.

Jubilee is the first Helkama pedelec available on the open market. Helkama has been providing the Finnish Post with utility pedelecs for years. Jubilee is among the lightest products tested, and has a neat handlebar, attached merely with a brake lever, the on-off switch for the Panasonic drive unit and a bell.

At a comfortable ride, the Auto-D system reliably switches to the right gear. Also interesting is the E-Trike from Helkama, which at a very good price presents a secure-standing option.

- + Light weight provides easy riding even without motor
- + Easy operation, short range is not a problem, as that the second battery only weighs 1.9kg.
- Panasonic drive and Shimano Auto D gear shift do not interact ideally

Riding Performance

Range · Mixed Track	29,1 km
Ø-km/h with motor Mixed Track	20,9 km/h
Assistance factor Mixed Track	0,4
Range · Mountain	8,7 km
Assistance factor uphill	2,7
Performance without motor	3

Specifications and Ratings

Total weight	25 kg
Battery weight	2 kg
Motor noise	1
Riding comfort	2

Price

Pedelec	€ 1,790
Replacement battery	€ 399

Address

Helkama Velox Oy
Santalantie 22
10940 Hanko (Finland)
Tel: +3581.928061 · jari.raininko@helkamavelox.fi
www.helkama.com · www.helkamavelox.fi

Components / Accessories

Quality bicycle components, Shimano Auto-D gear shift, Shimano roller brakes, front wheel rim brake, U-lock, air-pump, dynamo light with twilight sensor, separate charger, lithium battery, 1 year battery warranty, good user manual, frame size: 47 cm.



Neat cockpit but no longer a basket at the handlebar which was taken off to support a more sportive image of the Helkama Jubilee. · At loose pedalling the Shimano-Auto-D gear shift provides the right gear; but when changing into lower speeds it takes too long to shift.



- 1 The E-Trike provides a stable ride due to the two wheels in the front. The frontwheels could be easily folded to make storage and transportation easy. €2,490
- 2 The E2800 is utilizing the Panasonic drive unit with a 10Ah lithium battery and a Shimano 8 speed gear hub system. €2,190



i.step runner by Matra

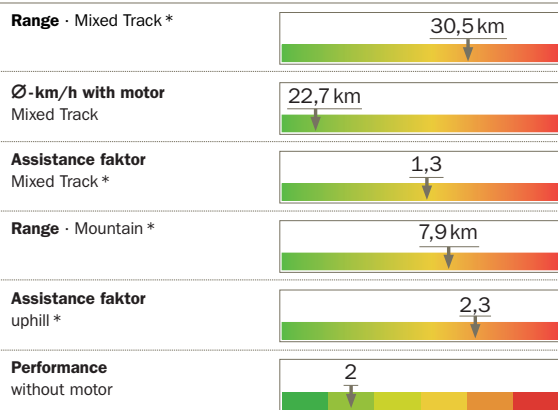
Matra's "i.step runner" is a unique well done product with a good price/value content, and it weighs in below average.

The car manufacturer Matra offers the i.step, a wonderful addition to the pedelec market. It was one of the few bikes in the test which had no technical problems throughout the testing period—which is no less than a few months long. Top-points: at only 23,8kg it is one of the lightest bikes tested. The bike itself has a special appearance; also unique is the custom version of the BionX-System: it is equipped with both an independent standing motor and an NiMhd battery. Matra also offers another technically similar version of "i.step runner" called "i.step city", it is suited for daily use with carrier racks, etc. Matra sells "i.step runner" for only 1 750€—here price and value meet.

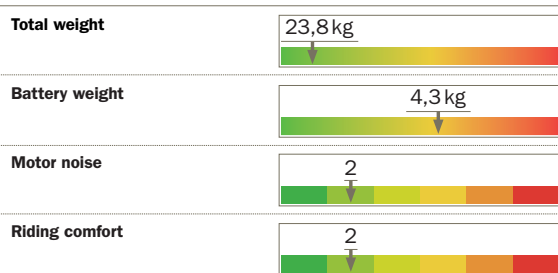


- + Both easy to ride and light.
- + Strong battery recuperation (return charge to battery) allows for downhill riding without manual breaks.
- Buttons on the display would be hard to use with thick winter gloves.

Riding Performance



Specifications and Ratings



Price



Adresse **Matra Manufacturing & Services**
 PA de la Clef St Pierre
 Buroplus 2 - 1B Avenue Jean d'Alembert - BP 4
 78 996 ELANCOURT Cédex (France)
 Tel: +33676 12 19 29 · www.matra-ms.com

Components / Accessories

Good bike components, Shimano 8-Speed gear system, front and back rim-brakes, no air pump, light draws from motor battery, separate battery charger, NiMhd battery, 2 year warranty.



A special variation of the BionX-System powers the Matra „i.step runner“. The big multi-function display not only looks great but also allows for a variety of adjustment possibilities.



- 1 The i.step Force is one of several interpretations of a sportive and elegant pedelec for multi purpose usage offered by Matra.
- 2+3 Matra is manufacturing and distributing as well the IO Cruiser of the producer Tidalforce. The battery is placed in the front hub and the powerfull motor in the rear hub.



Scooterbike Hybrid 2.0 by Used GmbH

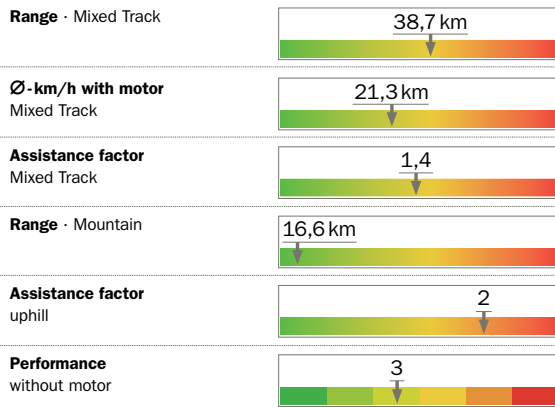
The Scooterbike Hybrid 2.0 from Used is a dream-ride... a dream ride for sale!

Sit back and enjoy the ride! The Scooterbike's range is around 40 km. The bike is equipped with a broad comfortable seat and the rider's position makes it especially easy on the wrists. Thanks to good adjustment options this bike is sized for anyone. Because the bike's BionX-System is uniquely adjusted for the Scooterbike it has some special advantages: motor coil-winding and BionX software provide strong take-offs up hills, and a high coverage range. The test rides showed this with a great hill range of 16,6 km with a good 2,2 rider assistance factor. For this reason the bike makes for comfortable tours in hill-regions—with surprisingly similar endurance range to its performance in flat regions.

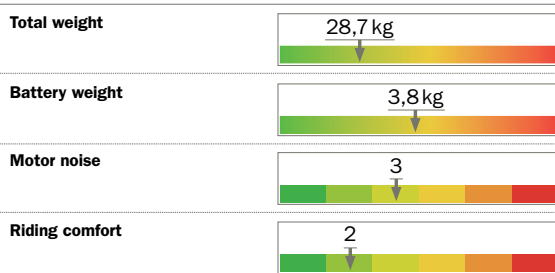


- + Comfortable seat and seating position.
- + Good suspension.
- The seating position may be unusual for beginners.
- Buttons on the display would be hard to use with thick winter gloves.

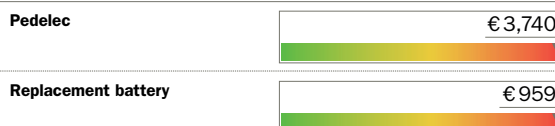
Riding Performance



Specifications and Ratings



Price

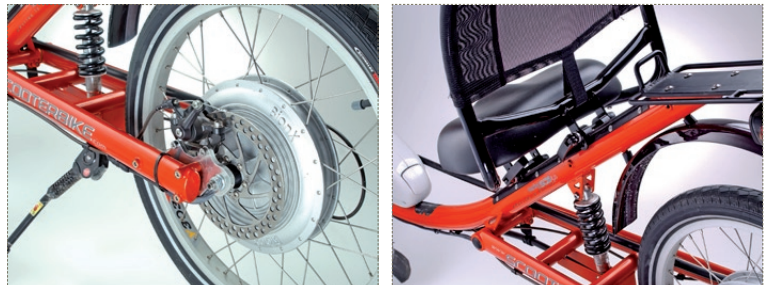


Address

USED GmbH
Am Bahnhof 3
49610 Quakenbrück (Germany)
Tel: +49(0) 543 19 08 99 82
info@used-HQ.com · www.used-HQ.com

Components / Accessories

Good bike components, Shimano derailleur, front and back disk-breaks, no air pump, dynamo light, separate battery charger, Sony lithium battery with a one year guarantee.



The powerful and efficient BionX-Motor makes the rider comfortable, but not without pedalling along uphill. · The wide seat together with the good back wheel suspension make for non-fatigue rides on both short and long stretches.



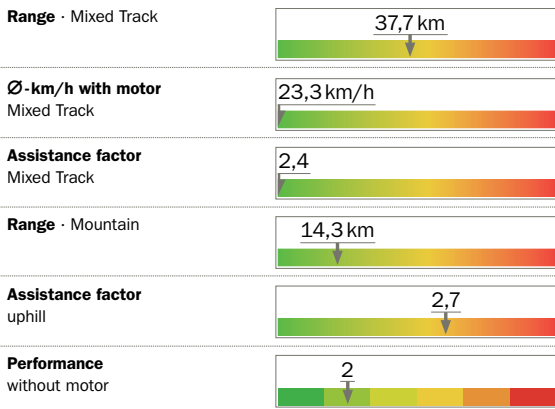
Kit PL 250 HL by BionX

The ad-on package BionX PL250HD combines high power with low weight, and good distance with riding fun!

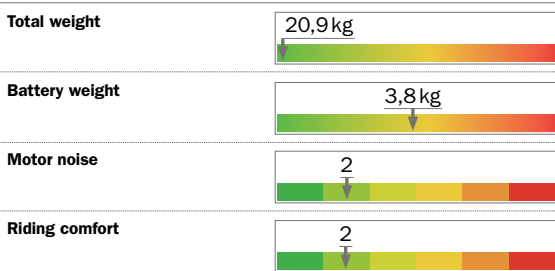
The BionX-System functions on almost every bike equipped with a derailleur gear system. The system was installed on our test bike (Univega MTB) in one hour by a bike dealer—experts require 30 min. Specifics: in “normal mode” the motor is not engaged; there are four levels of motor engagement, and four levels where the system serves as a generator. The generator modes feed energy back into the battery by breaking while traveling downhill. This generating allows for a 7 to 16 percent longer riding-time. The efficiency of the system sets new standards and is un-reached by production models; the variety of the system settings provides wonderfully for individual needs.

- + Strong motor break
 - + Light
 - + System specifics can be changed with software
-
- Gear-pack mounting is “screw-on type”
 - With slow riding or breaking the motor vibrates

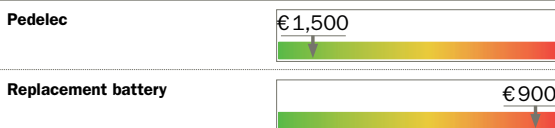
Riding Performance



Specifications and Ratings



Price



Address

BionX
73, St-Georges North
Asbestos (Québec)
Canada J1T 3M7
info@bionX.ca · www.BionX.ca

Components/Accessories

Only the system was tested, and not the bike.
Separate battery charger, and Sony lithium battery with 1 year guarantee.



When the right handle break is used, it automatically activates the motor generator break. · The battery mount is easily installed with the water bottle mount screws.



- + Strong motor assistance uphill
- + Low center of gravity
- Voltage-based battery capacity indicator inaccurate

Riding Performance

Range · Mixed Track	33,5 km
Ø-km/h with motor Mixed Track	23 km/h
Assistance factor Mixed Track	1,7
Range · Mountain	7,7 km
Assistance factor uphill	5,3
Performance without motor	3

Specifications and Ratings

Total weight	29,6 kg
Battery weight	5,6 kg
Motor noise	3
Riding comfort	3

Price

Pedelec	€1,400
Replacement battery	€250

Address

eZee Kinetics
Technology Co.,LTD.
Ching Wai Won
Tel: +862158224040
ezeebike@gmail.com · www.eZeebike.com

eZee Sprint

by Shanghai eZee Kinetic

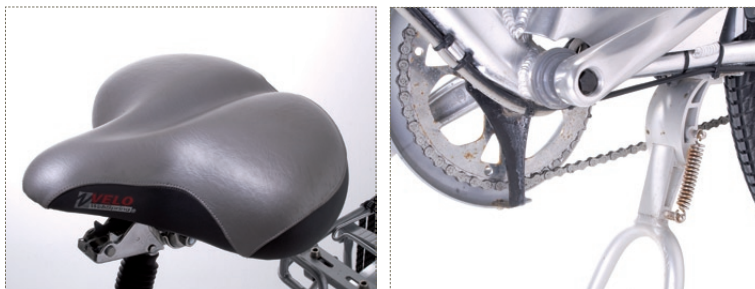
Recommended for being by far the strongest pedelec within this price category! Thanks to powerful motor and high assistance factor, eZee Sprint has lived up to its name.

eZee was the biggest surprise of the 2006 Test. Regarding electric performance it deserved a “very good” without doubt. Its integrated error detection device for electric components is outstanding. Among its high-quality components are the Shimano hub gear shift and the tires. Unfortunately, the picture is clouded with other bike components (such as bearings, lighting, chain wheel, and kick stand) which are below the overall quality level of the Sprint Pedelec.

eZee has replaced some of the weaker components, but because the improvements at eZee are ongoing in small lots we have not yet received a product for retesting. Range and weight were improved with the change to a lithium battery option.

Components / Accessories

High and low-quality bicycle components, Shimano gear shift, Tektro V-brake in the front, hub brake in the rear, lock, separate air-pump, dynamo light, separate charger, NiMhd battery, 6 months battery warranty on 80% remaining capacity, user manual, frame size: 43 cm.



The large bike seat had mixed reviews from our testers: great enthusiasm by some and explicit rejection with others. · Stand and chain ring were clearly rusting after only two months of test riding due to insufficient coating.



- 1 eZee Cadence app. €1,500
- 2 eZee Chopper app. €1,400
- 3 Quando I app. €1,100



estelle "Elegance"

by Heinzmann GmbH & Co. KG

Estelle "Elegance" is outstanding with high-quality and long-lasting components, combined with a solid frame with full-suspension.

The Heinzmann motor features a comfortable and powerful start-up assistance. It enables kick-off up to 6 km/h (3.7 mph) without added pedaling and is therefore fully satisfactory, even in very steep inclines. For ten years Heinzmann company has been steadily developing its components to be of high longevity and low maintenance. Battery, motor, and nearly all other electric parts are manufactured in Europe. Yet, some optical details are in need of improvement such as the bulky plugs and the battery holder at the carrier.



- + Strong motor assistance uphill and easy kick-off with no pedaling up to 6 km/h (3.7 mph)
 - + Comfortable frame suspension and seat
 - + Optional second battery doubles the range
- Right hand brake lever too short and uncomfortable to use for riders with small hands
 - Mounting the battery requires a skilled hand

Riding Performance

Range · Mixed Track	35,5 km
Ø - km/h with motor Mixed Track	22 km/h
Assistance factor Mixed Track	1,6
Range · Mountain	7,8 km
Assistance factor uphill	4,3
Performance without motor	3

Specifications and Ratings

Total weight	28,1 kg
Battery weight	5,9 kg
Motor noise	4
Riding comfort	3

Price

Pedelec	€2,649
Replacement battery	€565

Components / Accessories

Quality bicycle components, Shimano gear shift, V-brakes, U-lock, no air-pump, dynamo light, separate charger, NiMhd battery, no warranty on the battery but goodwill replacement within 1 year, good user manual, frame size: 50 cm



Good and high-quality engineering, unfortunately with many untidily laid cables and bulky plugs. The saddle was found especially comfortable by all test riders.



- 1 The estelle Elegance with the new Battery bag €2,649
- 2 The estelle Sport motor assists up to 40km/h; in the EU it needs an insurance plate to be legal on the road. €2,499
- 3 Heinzmann's speciality is to sell drive units according to customer specifications. They retail between €1,100 and €1,400

Address

Heinzmann GmbH & Co. KG

Am Haselbach 1
79677 Schönau (Germany)
Tel: +49(0) 76 738 2083 13

a.reinhard@heinzmann.de · www.estelle.de



Smike "Turbo" by Smike AG

Want to pick someone up at the train station with a bike? Is there an alternative to tandem riding? No problem with Smike: simply mount the side wagon onto the tour bike and bring along heavy luggage or a second person!

A smart mechanism makes it possible for the rider to even lean into the turn with the side wagon on, it is just important to keep in mind the extra width of the bike. However if one forgets, the side-rider is secured with a safety belt. Heavy or bulky loads are easily secured on the side wagon's floor with fixing-eyelets. The tests were taken with a 75kg load. There is no rider assistance factor given here because the side wagon sets this bike in a unique category. Conclusion: The Smike Turbo is a whole new bike category, indeed a quick-change artist: in the basic version it is a beautiful tour bike—with the side wagon it is a taxi bike or a hauling wagon.

- + With Smike options are provided which were before not possible with a bike.
- + Simple transition between tour bike and bike with side wagon.
- Pretty heavy—on hills without the electric motor, movement is difficult.
- Riding with the side wagon requires some getting used to.

Riding Performance

Range · Mixed Track	15,2 km
Ø-km/h with motor Mixed Track	20,8 km
Assistance factor Mixed Track	0,9
Range · Mountain	3,2 km
Assistance factor uphill	1,1
Performance without motor	4

Specifications and Ratings

Total weight	49 kg
Battery weight	6 kg
Motor noise	3
Riding comfort	2

Price

Pedelec	€3,249
Replacement battery	€590

Address

Smike AG
Postfach 3164
6003 Luzern (Swiss)
info@smike.ch · www.smike.ch

Components / Accessories

Good bike components, Shimano 7-Speed hub-gearing-system, front and back Magura hydraulic rim breaks, no air pump, dynamo light, separate battery charger, NiMHd battery (without guarantee).



The Heinzmann hub motor makes riding up hills very easy. · Thanks to a well thought out locking mechanism, the side wagon is easily mounted on the Smike Tour bike without tools.



1 The Smike without the side wagon



lon m-gear by Sparta BV

A high-quality equipped pedelec, flawlessly hiding the modern electronics.

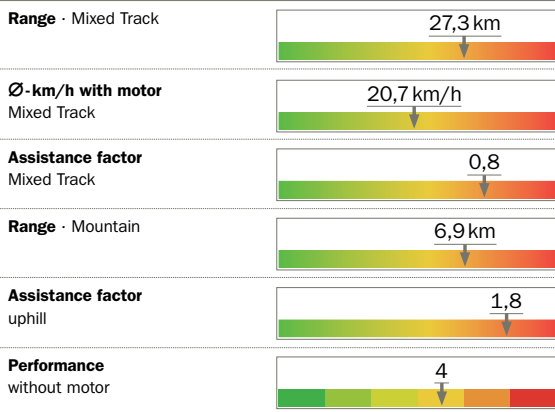
In recent years, the Sparta ION pedelec series has convinced tens of thousands of customers with its concept.

Our test riders mainly rode the power mode (with the strongest assistance), because they found the lowland economy programs insufficient on the hilly test track. Truly ingenious is the switch unit, camouflaged as a bike computer. Other than the classical functions (speed, trip kilometres etc.) it shows the current riding mode and turns on and off the light. If an electric defect occurs, the user is informed on the computer display. The computer is also a key. It communicates with the battery electronics, where the owner's personal data is saved and which is situated in the main frame, along with the battery. An excellent theft protection.

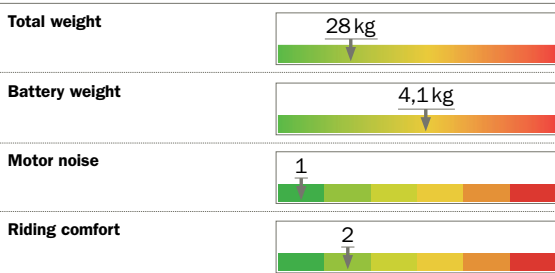


- + Outstanding service interface: the dealer can immediately analyze problems by means of the on-board computer and adapt the settings to the customer
- + Absolutely noiseless motor
- The battery cannot be removed from inside the frame for charging

Riding Performance



Specifications and Ratings



Price



Address

SPARTA BV
 Wilmersdorf 37
 7327 AD Apeldoorn (The Netherlands)
 Tel: +31553578700
 info@sparta.nl · www.sparta.nl

Components / Accessories

High-quality bicycle components, Shimano derailleur, rim brakes, U-lock, air-pump, light draws from battery (when the battery is empty the motor functions as dynamo), NiMhd battery, 2 years warranty, separate charger, good user manual, frame sizes: 46, 50, 55cm; men's frame: 50, 54 and 59cm



Comfortable and attractive handle bar with a variety of adjustment options. Small hub motor with good assistance factor only on level grade and small hills, not designed for long uphill rides.



- 1 Ion classic €1,799 · The Ion Classic is the lowest priced pedelec offered by Sparta.
- 2 Ion GL €2,294 · The luxurious styled Ion GL is the new top-model of the Sparta Ion line, electrically it is almost identically with the classic line.
- 3 The new Sparta full-dot display eases communication with the user since it can state in full words what is taking place. It no longer uses codes and symbols.



Emove Tourer
by Hercules Fahrrad GmbH & Co. KG

In detail it is a convincing pedelec that perfectly disguises its intrinsic values as a bike.

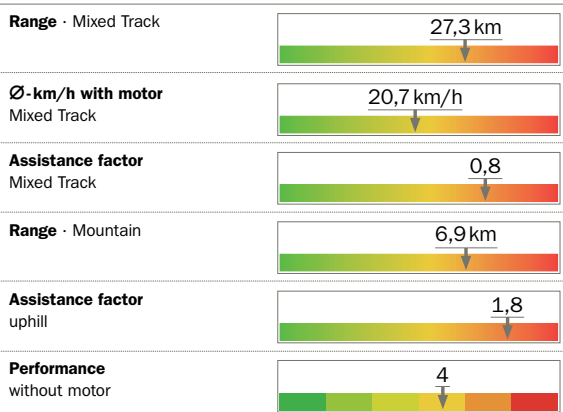
Under the name Emove, Hercules offers pedelecs with invisible and silent, yet noticeable motor boost. The engineering, developed by the sister company Sparta, was the leader of the European market in 2004 and 2005.

Since 2006 the Sparta pedelec is available in Germany under the trade name Hercules. Thus resuming a 100-year tradition of the Hercules brand in the field of light electric vehicles.

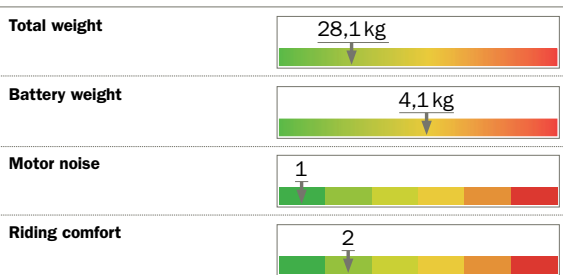
Emove Tourer and other Emove models are characterized by both the battery hidden in the frame, and the silent hub motor. With all models the electronic control center is located in an easily operated bike computer.

- + Outstanding service interface: the dealer can immediately analyze problems by means of the on-board computer and adapt the settings to the customer
- + Absolutely noiseless motor
- The battery cannot be removed from inside the frame for charging

Riding Performance



Specifications and Ratings



Price



Address **Hercules Fahrrad GmbH & Co. KG**
Industriestr. 32-40
90616 Neuhof an der Zenn (Germany)
Tel: +49(0) 091 07 92 30
info@hercules-bikes.de · www.hercules-bikes.de

Components / Accessories

High-quality bicycle components, Shimano derailleur, coaster brake and V-brake, U-lock, air-pump, light draws from battery (when the battery is empty the motor functions as dynamo), NiMhd battery, 2 years implied warranty, separate charger, good user manual, frame sizes: 46, 50, 55cm; man's frame: 50, 54 and 59 cm



On first glance a bike computer, in fact the key to electric drive, capacity display, light appliance, fault analysis, etc. The engineering being mostly identical with Sparta, Hercules has added a useful saddle bag.



- 1 Emove Tourer €1,899.00. Men's style frame blue-silver with rim brakes and 10 Ah battery.
- 2 Emove Tourer RT low step in frame €1,994 10Ah battery
- 3 By adding the compatible larger mounted battery (9 Ah, €399) the range can be doubled.



Sunrunner by Shoprider

Shoprider's Sunrunner is a light and robust pedelec with a very innovative lithium iron-phosphate battery.

The light Sunrunner from Shoprider Com. has a discreet system: the small hub motor in the front wheel is hardly visible, this also goes for the motor control (which is in the lamp housing) and the power sensor (found in the bottom bracket) as well as the battery itself (on the handle bars). Nearly every component is made by Shoprider (the Taiwanese Light-Electric-Vehicle producer), even the battery and the LED for the light. The other components are quite simple, therefore it is no wonder that the bike we tested weighed in at 20,7 kg. The Sunrunner is impressively robust.

- + Light bike
- + Easy to use

- Most assistance from the motor is available only when taking-off, therefore the rider assistance factor is small in general.

Riding Performance

Range · Mixed Track	23,5 km
Ø-km/h with motor Mixed Track	20 km
Assistance factor Mixed Track	0,4
Range · Mountain	4,9 km
Assistance factor uphill	1,7
Performance without motor	2

Specifications and Ratings

Total weight	20,7 kg
Battery weight	1,4 kg
Motor noise	3
Riding comfort	2

Price

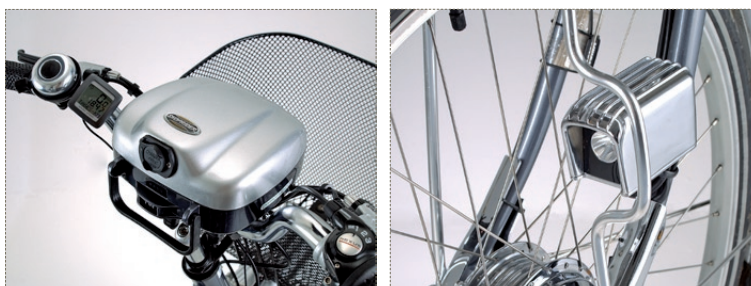
Pedelec	€1,200
Replacement battery	€225

Address

Bronx (UK) Ltd
 Tel: +44 1494 529980
 admin@bronxcycles.com · www.bronxcycles.com

Components / Accessories

Simple bike components: Shimano 3-Speed hub-gear-system, front rim brake/ back pedal brake, no air pump, front light draws from motor battery, no back light, separate battery charger, lithium iron-phosphate battery from Shoprider, guarantee on the battery for either 1,000 cycles or two years.



In a small housing on the handle bars you will find the first lithium iron-phosphate battery used on a pedelec! · Who thought of this great idea? The motor control is discreetly located in the lamp housing!



intelligent bike by Sunstar

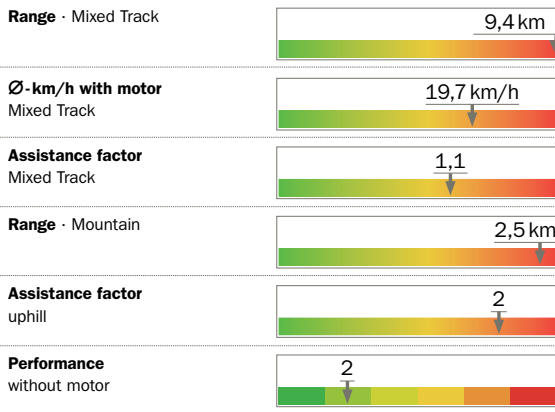
The Sunstar intelligent-Bike after market installation, with its light weight compact form, is a new innovation that inconspicuously fits on almost every bike.

The intelligent-Bike ad-on kit from Sunstar (a large Japanese corporation) weights only 6 kg. The motor is installed on the bottom bike bracket and works on almost every frame. The battery is so small that it can be installed in different places. It is important to know that the battery cable cannot be made longer. The battery, at 900gr, has the equivalent power of a full-size cordless-drill battery. Fitted to our test-bike it provided an good range of 10km on our Everyday Track. We therefore recommend purchasing a second battery in order to always ensure arrival to the intended destination. Alternatively, one could also purchase a second battery charger and leave it at the work place. The small battery is easy to take with.

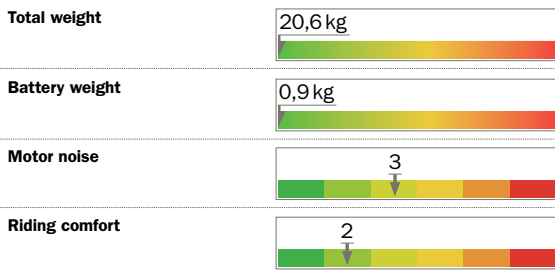


- + Extremely light pedelec drive system.
- + It is an easy ad-on kit installation.
- Small battery capacity, which can be compensated with additional batteries at 900gr.

Riding Performance



Specifications and Ratings



Price

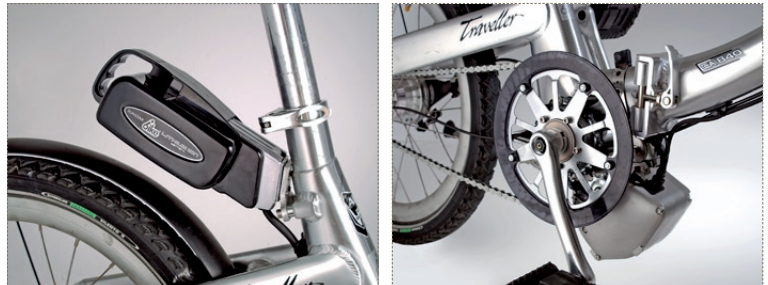


Address

Sunstar
EV-Showroom
3, Rue Du Viel Renverse
FR 69005 Lyon (France)
Tel: +33 4 78 37 50 44
evshowroom@aol.com · www.Sunstar-ibike.fr

Components / Accessories

Only the system was tested, and not the bike. Separate battery charger, Sony lithium battery.



At only 900gr, the small battery is the lightest in the test; however, most users will need 1 or 2 extra. · The motor can be easily installed on nearly every frame.



- 1 The next generation drive unit is just entering the market, it is more compact and easier to install. Larger battery options to suit the EU market are under development.
- 2 Sunstar offers this kind of ultralight compact bicycle on the japanese market for about €1,000
- 3 The drive unit parts fit to almost every bicycle



- + Once the rider is used to the recumbent seat, it is very comfortable.
 - + Very strong motor and high-speed.
 - + Riding-range can be doubled with a second battery.
- Complicated to adapt to different body sizes (chain length requires adjustment).

Riding Performance

Range · Mixed Track *	16,7 km
Ø-km/h with motor Mixed Track	33,5 km/h
Assistance faktor Mixed Track *	5
Range · Mountain *	14,6 km
Assistance faktor uphill *	5,9
Performance without motor	3

Specifications and Ratings

Total weight	27 kg
Battery weight	2,8 kg
Motor noise	3
Riding comfort	3

Price

Pedelec	€ 4,495
Replacement battery	€ 520

Address

Lohmeyer Leichtfahrzeuge GbR

Geistinger Str. 31
53773 Hennef (Germany)
Tel: 02242 82584
0172 5929456

d-Lohmeyer@gmx.de · www.leichtfahrzeuge.de

Mistral-E by Lohmeyer Leichtfahrzeuge GbR

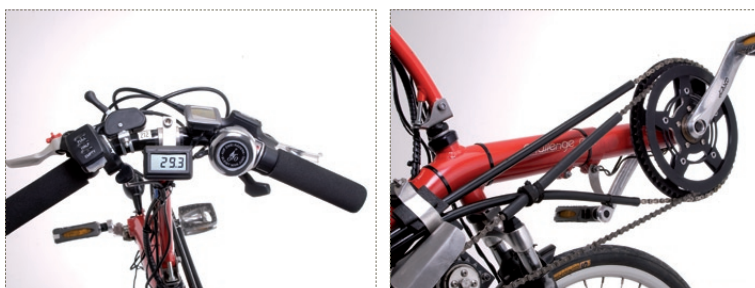
Recommended for being the fastest and strongest pedelec. Perfect for individualists covering long distance on a daily basis and not afraid of engineering.

A few years ago unthinkable—today reality: a pedelec assisting up to 50 km/h (31 mph). Considering the value of the vehicle, it is reassuring to have the required insurance plate which allows for theft insurance. Lohmeyer offers the motor drive together with the Mistral recumbent bike by Challenge; however, the motor drive can be ordered and fit onto any other custom bike. Due to the bike's high-speed and large assistance factor, energy usage is very high; thankfully, it is possible to triple battery capacity and use a quick-charger to recharge as much as possible during short stops.

Since 2007 the battery is offered optionally in a textile bag on the rear carrier.

Components/Accessories

Quality bike components: Sram dual drive gear shift, Magura hydraulic brakes (disk brake in the front rim brake in rear), no air-pump, no lock, bike light draws from battery, separate charger, lithium battery with 6-month warranty, user friendly bike manual, one highly adaptable frame size.



The handlebar is loaded with operating devices with the digital voltage indicator in the center. · The strong drive comes from a second chain which connects the motor with the bottom bracket—for this reason the system requires longer installation time on other bikes.



- 1 Anthrotech-E, € 3,735
- 2 Alleweder-E custom made prices start at € 5,105.
NimHd 8-Ah Battery up-grade to Li-ion 11-Ah costs € 180.
- 3 Power kit: € 1,320



Helio by eGo Vehicles, Inc.

**Helio, a great concept: part bike, part scooter.
Good engineering for a good price.**

Helio has developed from the e-bike as that it no longer has pedals but a bigger battery and a stronger motor. It indicates a development towards no pedaling, as opposed to a pedelec. Despite high average speed and rapid acceleration, the felt speed was considerably slower than with pedelecs- added pedaling clearly boosts felt speed. With Helio the motor is controlled with a throttle, allowing smooth acceleration and deceleration.



- + Easy to use and comfortable
- + Effective motor brake
- Voltage-based battery capacity indicator inaccurate
- Hard to move when the battery is empty

Riding Performance

Range - Mixed Track	38 km
Ø - km/h with motor Mixed Track	20,1 km/h
Assistance factor Mixed Track	
Range - Mountain	21 km
Assistance factor uphill	
Performance without motor	

Specifications and Ratings

Total weight	62,1 kg
Battery weight	24 kg
Motor noise	3
Riding comfort	2

Price

Pedelec	€ 1,990
Replacement battery	€ 198

Address solar und mobil GmbH
Ludwig-Erhard-Str. 9
64653 Lorsch (Germany)
Tel: +49(0)62 51 58 82 45
helio@solar-mobil.de · www.egovehicles.de

Components / Accessories

Quality bicycle components, quiet rim drive, V-brakes in the rear, disc brakes in the front, anti-theft protection by turning the main key, no air-pump, good lights off the battery, Lead battery, 6 months battery warranty, good user manual. Optional: trailer, quick charger, rain protection. Universal frame size.



The throttle allows electric acceleration as well as effective deceleration, and also enables energy recuperation. The voltage-based capacity indicator and the main switch are integrated into the aluminium frame. Unfortunately, the remaining range can only be estimated with some experience.



- 1 HELIO 37 km/h
- 2 HELIO S-Version 37 km/h, €2,090
- 3 Solar+Mobil also offers the Twike—a two person muscle electric vehicle street legal as a car PKW. Price: € 16,000 - 20,000. (depending on the battery capacity)