

eniCycle

ELECTRIC UNICYCLE

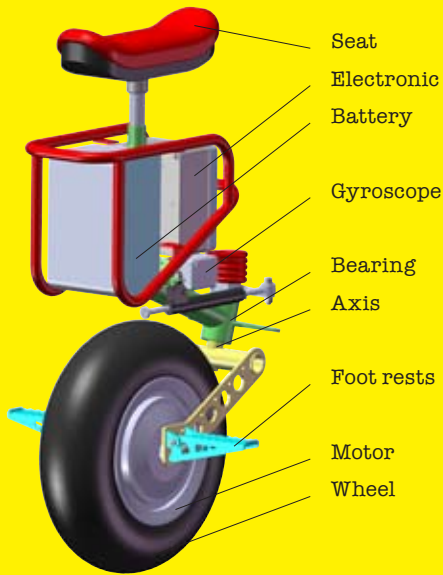


Electric driven.

Self balancing -
gyroscope
stabilized.

Direction
steering
system.

Learn in 30
minutes.



What is eniCycle?

eniCycle is an innovative vehicle similar to the unicycle, with the following important improvements:

- eniCycle** Electric driven.
- eniCycle** Self balancing - gyroscope stabilized.
- eniCycle** Direction steering system.
- eniCycle** Simple riding – similar to riding a bicycle. Average learning time is 30 minutes.

How does it work?

To ride the eniCycle, you sit on the seat and place your feet on foot rests on the both sides of the wheel. Then two independent functions enable easy riding of eniCycle.

Gyroscope stabilization prevents falling forwards / backwards

Electronic gyroscope measures vertical angle of eniCycle. If you lean forwards, this is detected by gyroscope and the electronic accelerates the speed of the motor to put the eniCycle back in balance. In case you lean back, the speed is decelerated. A complete control runs 100 times per second and stabilizes eniCycle in a perfect vertical position. Because of this eniCycle fits into the category of self balancing vehicles. The speed of eniCycle is controlled by leaning forwards/backwards.

Direction steering is done by pressing on the left / right foot rest

For turning left, you press the left foot rest. The wheel leans to the left and eniCycle turns left. For turning right you press the right foot rest.

Direction steering is very similar to steering a conventional bicycle. You steer a bicycle by turning the handlebar with your hands. By eniCycle you steer with your feet. This is the reason why learning to ride eniCycle is so simple. You must just learn to use your reflex response on your feet. The average user can learn this in less than 30 minutes.

Riding the eniCycle has nothing in common with riding a typical unicycle as seen in circus shows (except that both have just one wheel).

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eniCycle advantages

eniCycle can not be compared to any other vehicle type, because it opens completely new possibilities in human transport on short distances. Some important advantages/differences are listed below:

- eniCycle Learning to ride is very easy. A field test of 15 persons in March 2008 shows, that all the participants succeeded to start, ride a circle and stop in less than 30 minutes.
- eniCycle It's electrical driven, it doesn't cause any noise or gas emissions. 30 km driving distance with one battery charging.
- eniCycle It can replace cars on short distances. It enables "park and ride" style of use in the city centers. There are no problems with traffic jams and an access to pedestrian reserved areas.
- eniCycle It's very efficient, during downhill driving the battery is recharged.
- eniCycle It's more agile than a bicycle, it can be compared to inline skating.
- eniCycle It's simple for transport. During the storage in a car trunk it can be recharged from car's 12 V battery.
- eniCycle No parking problems. It can be taken to the elevator and 'parked' beside your working desk.
- eniCycle It can be used as a high tech toy.

Prototype

Prototypes are build from standard of the shelf parts:

- eniCycle brushless hub motor imported from China
- eniCycle standard D size NiMH batteries connected into battery pack
- eniCycle MEMS gyroscopes and accelometers
- eniCycle All parts are mounted on the steel frame. Control electronic and corresponding software is custom developed.

Prototype specifications:

- eniCycle 15 km/h maximum speed
- eniCycle 30 km range with one battery charge
- eniCycle 1000 W motor
- eniCycle 44 V 10 Ah battery pack
- eniCycle 5 hours charging time for battery
- eniCycle weight 28 kg

Market

The market size for eniCycle can be estimated, if it is compared to the market of electrical bicycles and small electrical scooters. According to Electric Bikes Worldwide Reports 2007 market size for light electrical vehicles is 20.000.000 units annually. Electric bicycles and small electrical scooters market size for US is 2.100.000 and is 320.000 units for EU annually. It is realistic, that eniCycle with its unique advantages can acquire 10 % of this market, which means 200.000 units in US and 30.000 units in Europe annually.

Here must be emphasized that added value per unit in eniCycle can be much higher comparing to electrical bicycles and electrical scooters. This is because of the patent protection and the pole position on the market. On the other hand the production costs are a little higher than by simple electrical scooter because of more complex electronic and sensors.



On sale

eniCycle is in patent pending phase. PCT internal application protects author's intellectual property in all countries members of Paris Convention for the Protection of Industrial Property. Currently this is 138 countries including all of the major industrialized countries.

Patent search has been done to verify novelty and patentability of this idea.

Citation: Objective and scope of patent search

The objective is to perform a patentability search of available US and foreign patents and publications that disclose a user-direction-steered unicycle with an electrical motor-wheel, a battery and a gyroscope stabilizer. Based on references (prior art) generated by the search, and on the invention description to the extent it is clear and understandable, an opinion relative to possible patentability is stated.

In terms of coverage, the patentability search includes all available US and foreign patent documents (i.e., patents and published applications).

The scope of the patentability search includes a unicycle having features described below and shown in client's illustrations, including in particular single wheel motor, battery power source, gyroscope(s), steering mechanism or comparable arrangements/combinations.

Citation: Patent search conclusion

It is my opinion, absent further findings to the contrary, that this unicycle configuration can qualify for a patent if it is presented in a patent application that includes XXXXXXXXXXXX. To the best of our ability, we have tried to find such feature in the prior art but have not been successful in doing so.

Author is owner of all intellectual property rights for eniCycle. Two options are offered for cooperation:

- eniCycle** Purchase of license for specified geographic area
- eniCycle** Investment in common joint venture, which will produce and sale eniCycle

Prototypes are build and tested, as it is seen here. For industrialization product design is missing and optimization of design according to production technologies / prices.

Author

Born 1971, Slovenia

Education MSc Electrical engineering

Professional experience

- 2 years young researcher at Faculty of Electrical Engineering and Computer Science, Maribor, Slovenia
- 5 years as R&D manager in privately owned company Ultra d.o.o.
- two years as a manager and share holder in company Emsiso d.o.o.

Professional focus

- electronic industry, especially development of new electronic products

Previous patents

- coauthor of worldwide patent for mobile phone payment system.

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