



*Center for **E**-Mobilitet*

**E-MOBILITY CENTER**



**Nordic Folkecenter for Renewable Energy**  
*Nordisk Folkecenter for Vedvarende Energi*







**Nordic Folkecenter for Renewable Energy, 2013**

Texts: Preben Maegaard, Nicolaj Stenkjaer, Johannes Brauer, Anna Krenz  
Photos: Nordic Folkecenter for Renewable Energy, Johannes Brauer, press materials  
Layout: Anna Krenz

[www.folkecenter.net](http://www.folkecenter.net)

# *Center for **E**-Mobilitet*



## **E-MOBILITY CENTER**



**Nordic Folkecenter**  
for Renewable Energy

---





*Minister for Housing, Urban and Rural Affairs, Carsten Hansen, tested an electric bicycle during his visit to one of the series of the Fossil-Energy-Free Conferences, organised by the Folkecenter (June 2013).*





One of the most discussed questions is: How to supply the future global demand for energy. Climate warning, the decreasing fossil resources and the increasing demand on energy are only a few topics, which are part of this challenge.

The mobility sector is one part that belongs to it. How can we be mobile without using limited fossil fuels and how can the vehicles become more efficient? These are only two questions, for which the sector has to find answers.

During the last couple of years one tendency has led to the development of efficient electro mobility. It is predictable that this technology will become more and more important in the future. This technology not only belongs to the field of automobile. The sector of smaller vehicles follows also this development.

*Have you ever tried to ride an electric bicycle?*

*Would you like to know more about electric vehicles?*

*Would you like to gain a hands-on experience before you buy an electric bike?*



# WELCOME!

Following its goals, to inform, to demonstrate, to test and conduct research, the Nordic Folkecenter joined the development of electric mobility and in 2012 has set up an **E-Mobility Center**, which is devoted especially to two- and three- wheel electric vehicles.

The newly established Center displays in 2013 fourteen electric vehicles: 8 bicycles, 3 three-wheelers and 3 scooters. With its variety of vehicles the **E-Mobility Center** covers almost all target groups. Particularly, the regular bicycles give good impressions of the new technology as well as a comparison between different types.

The range of vehicles is aimed to satisfy nearly all adult age groups. There are sportive types as well as classic types and also some eye-catchers available. Bicycles in the Center come from different international manufacturers and provide the possibility to compare different models in many ways.

The vehicles are not only used for exposition purposes at the Folkecenter, they are included in the daily workflow as well as in the normal life of staffs and trainees. This provides many experiences about advantages and shortcomings of each bike under real life conditions.

The **E-Mobility Center** of the Nordic Folkecenter extends a warm welcome to you. Come and visit Folkecenter - make your own experiences with the new technology of electric mobility!

# FOLKECENTER and Sustainable Transportation

*Sustainable transportation has been on the agenda of the Folkecenter for many years. Since 1992 Folkecenter has been conducting research & development projects based on experience and innovative approach in areas of sustainable transportation including plant oil, hydrogen and electric vehicles operating on renewable energy.*



Plant oil car (rape seed oil)



Ford Focus driving on hydrogen



Tractor converted to plant oil, Nizhny Novgorod, Russia



Hydrogen filling station



Converted engine

## PLANT OIL CARS

Folkecenter has done research and has developed solutions for production of plant oil since 1994. The focus is on decentralised production of pure plant oil (PPO) for transportation purposes. Folkecenter has a Plant Oil Laboratory for testing of equipment, demonstration of systems, education and quality control of the PPO. Services and measurements have been offered to the industry, farmers and authorities.

Conversion of standard diesel engines, to optimise them for PPO, has been a major issue for Folkecenter. Fairly simple alternations convert a diesel engine, optimised for vegetable oil, but still fully capable of running on diesel, as backup. Folkecenter for many years worked together with leading European laboratories and manufacturers within plant oil conversion kits that are available for a large number of diesel engines. Folkecenter arranged numerous "do-it-yourself" workshops, where private persons, companies and authorities converted their vans and family cars engines, to run on vegetable oil.

## HYDROGEN CARS

Hydrogen is not a source of energy, but can be used as fuel, produced on the basis of several sources of energy. Hydrogen does not pollute, since the exhaust is only water. The advantage of hydrogen is that it can be used to store excess renewable energy for use during the days with low production of electricity from renewable energy sources (wind, solar). Windmills have a fluctuating production of electricity, but the excess power can be stored with the use of hydrogen.

As the only place in Denmark, Folkecenter early developed the whole wind-hydrogen car chain with electrolysis plant at 20 kW, storage of hydrogen and filling station for tanking of cars with hydrogen.

Folkecenter converted a standard Ford Focus 2-litre petrol engine to run on hydrogen. A prototype car was converted, tested and first presented to the public in July 2003. It was the first car converted to hydrogen in Denmark.



# ELECTRIC MOBILITY at the Folkecenter

*Electric mobility based on traditional fossil fuel-generated power does not represent an ecological sustainable transition for the future. Therefore, Folkecenter strongly promotes cars fueled by electricity generated from renewable energy sources.*

## ELECTRIC VEHICLES

The electricity for transportation can be produced without pollution (from wind turbines), electric cars are economical, do not require much maintenance and are almost noiseless. Electric cars are environmentally superior compared to gasoline or diesel cars. Electric vehicles do not emit exhaust, and can reduce smog in cities significantly.

Today 24% of the total CO<sub>2</sub> emissions in the world come from transportation. The amount has increased dramatically over the last few years and will increase substantially in the future, as the need for transportation increases along with globalisation and economic growth.

One kilometre driven in an electric car in Denmark can reduce the CO<sub>2</sub> emissions by about 40%, compared to one kilometre driven in an equivalent diesel or gasoline car.

## CHARGING STATION FOR ELECTRIC CARS

At the Folkecenter visitors can get their electric vehicle (electric scooter, car or tractor) charged with 230 or 400 volts wind energy.

The Folkecenter has a filling station for electric vehicles. The filling station is powered by a small wind turbine and solar cells.



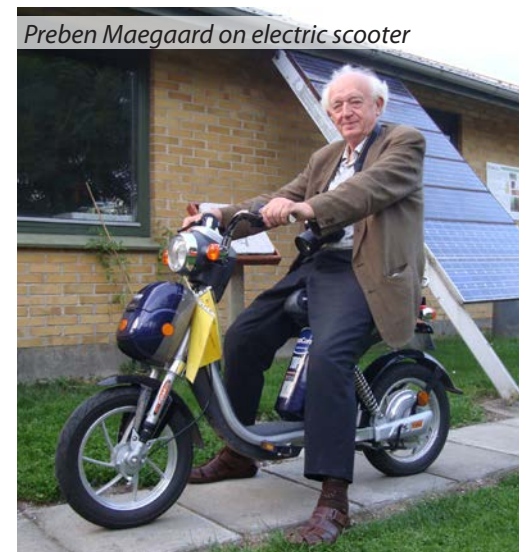
*Electric car KEWET is being charged by solar energy at the Folkecenter.*



*E-Mobility Center, Folkecenter*



*Electric scooters*



*Preben Maegaard on electric scooter*

# E-MOBILITY

*The electrification of mobility is the key to a viable future transport system. In the next ten years, we can expect rapid technological and economic development of electro mobility worldwide. Electric bicycles running on renewable energy are not only environmentally friendly but they also help to rediscover the joy of biking for people of all ages.*

## ELECTRIC MOBILITY

An electric vehicle is a vehicle that can be recharged from an external source of electricity, such as wall sockets. The electricity stored in rechargeable battery packs drives or contributes to drive the wheels. A wide range of models are available especially in the automobile sector. In terms of appearance, electric vehicles [EV] often look like conventional vehicles.

Technology brings a variety of advantages: because of the electric engine, these vehicles do not need a gearbox, coupling, water cooling system and other components, which are essential for non-electric cars.

In 2013, investment costs for electric cars still are higher than for conventional cars and this is one of the biggest disadvantages. With increasing production, however, these costs will drop and gradually reach a level of profitability.

More and more popular, electric bikes have some challenges and features. The auxiliary engine helps to accelerate and maintain the speed. With its support it is no longer a problem to ride with a constant and/or high speed over a longer time. Especially in regions with much wind or altitude differences this feature shows its benefits. In some bicycles the engine can be turned off and the bike can be operated as an ordinary bicycle. Electric bikes get their power to drive (the electric motor) from energy stored in batteries that are located on the electric bicycle. These batteries are rechargeable by plugging them into a regular household outlet. E-bikes weigh about 4 kg more than conventional bikes and resemble them completely.

For elderly people e-bikes obviously are a help to stay on wheels and be fit, similarly, people with health problems can also enjoy mobility and as for the younger generation - e-bikes with trendy design become more and more attractive. Several national and local governments have established tax credits, subsidies, and other incentives to promote the introduction and adoption in the mass market of electric vehicles. In Norway in 2013 a medium-sized electric car was the second most sold of all cars.

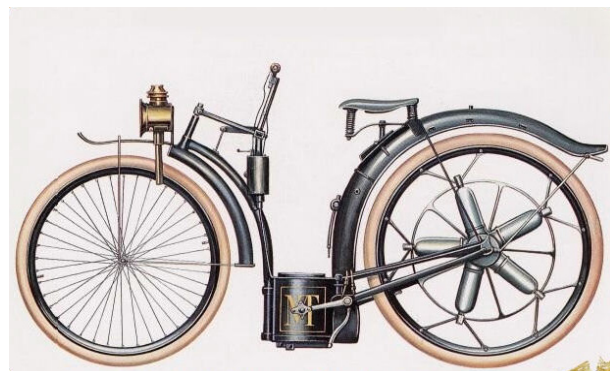
## HISTORY

Surprisingly, the technology of electric vehicles is actually not that new as one may think. The first electric car was designed by Gustave Trouvé and drove already in 1881. In comparison, the first fossil-powered vehicle designed by Carl Benz drove in 1886. Therefore, the invention of electric cars is older than the invention of fossil-powered cars. At the beginning of the 20th century existed more electric cars than cars using hydro carbons.

The idea of motorised bikes is about 120 years old. The first bicycles with motors appeared in the 1890s in France and in USA. Modern e-bikes are the electric motor-powered versions of the early motorised bicycles, which were mostly using internal combustion engines, very few were equipped with electric motors.

During the following 100 years some improvements were made to the electric bicycle, but it never became commercially successful. Not until the 1990s that new interest and redevelopment of previous technologies led to commercially successful electric bicycles and, as we see today, a booming electric bike industry.

It seems we are now celebrating the renaissance of electric vehicles.



*The Millet "motocyclette", designed in 1892 by Félix Théodore Millet, may have been the first motorcycle (or motorised bicycle) to use pneumatic tires. It had an unusual radial-configuration five-cylinder rotary engine incorporated into the rear wheel, believed to be the first one ever used to power a person-carrying vehicle of any type.*



## CLASSIFICATION

Depending on local laws, in different countries most e-bikes (e.g. pedelecs) are legally classified as bicycles (rather than mopeds or motorcycles). They are not subject to the more stringent laws regarding their certification and operation, unlike the more powerful two-wheelers which are often classed as electric motorcycles. Considering operational features, e-bikes are defined according to classes:

### 1. E-bikes with pedal-assist only:

the electric motor is regulated by pedalling. The pedal-assist augments the efforts of the rider when pedalling. These e-bikes have a sensor to detect the pedalling speed and force, or both. Brake activation is sometimes sensed to disable the motor as well. E-bikes with pedal-assist only are either Pedelecs (pedal electric cycle) or S-Pedelecs:

**PEDELECS** (legally classed as bicycles): motor assists only up to a decent but not excessive speed (usually 25 km/h); motor power up to 250 Watts.

**S-PEDELECS** (often legally classed as mopeds or motorcycles): motor power can be greater than 250 Watts; can attain a higher speed (e.g. 45 km/h) before motor stops assisting.

### 2. E-bikes with power-on-demand only:

in such e-bikes the motor is activated by a throttle, usually handlebar-mounted just like on most motorcycles or scooters. These e-bikes often have more powerful motors than pedelecs but not always. The more powerful of these are legally classed as mopeds or motorcycles.

### 3. E-bikes with power-on-demand and pedal-assist.

## ADVANTAGES

Electric bikes allow clean transportation using renewable energy sources and can simultaneously combine healthy exercise with the necessary mobility. An electric bike can bring a greater pleasure in cycling, which reduces the use of polluting cars. E-bikes are a combination of cycling exercise and moped auxiliary.



Today, motorised bicycles are being developed both as complete designs and as add-on motor kits for standard bicycles. Conversions are made either by part-time hobbyists or by commercial manufacturers. New batteries are becoming lighter and more powerful, which make electric motors for power assist increasingly more popular.

## E-MOBILITY IN DENMARK

Electrical bikes appeared in Denmark for the first time around the year 1998 as previously electric bikes were mostly used by the elderly or the disabled. Today, it is slowly beginning to change, electric bikes are becoming more and more popular as they have a more modern design and now look like any other bikes.

Denmark is an e-mobility-friendly country: Not only it is flat, but there are short distances between cities with commuter distances of above 19 km. Decentral power grid in Denmark provides electricity for charging from renewable energy sources - according to the national energy plan, 50% of energy should come from wind turbines in 2020. And there is no tax on electric vehicles.

## GLOBAL MARKET

Most electric bikes are manufactured in China, however, countries like Denmark, England, Italy and Germany also produce their own e-bikes.



In the 1990s, only about 150 000 e-bikes were sold in China. By 2013, annual sales reach 28 million e-bicycles (92% of the global market). Today, at least 120 million e-bikes are already on Chinese roads. Photo: Shopping Center, Nanjing, China (Preben Maegaard)

Globally, electric bicycles are being sold in the millions and this figure is expected to rise because prices of electric bikes are constantly falling, while the quality keeps getting better - bikes are running longer on a charge, batteries are getting lighter and more efficient and the bikes become alluring and modern designs. For designers and engineers e-bikes are a challenge for improvements of the technology and finding more futuristic solutions.



E-bike of the future: nCycle designed by Skyrill and Marin Myftiu: The novel bicycle frame is constructed from a pair of side panels, which conceal a battery, storage compartment, an optional folding mechanism, and integrated safety and security features. nCycle is intended to represent an electric conveyance that is "cheaper, sturdier, more flexible, easier to build and maintain."



# CHOOSING AN E-BIKE

*There are many various types of electric bicycle available. Each has a different purpose and features. Getting advice and information from a local cycle shop can help you in making the right decision in choosing an e-bike. But sitting on a bike and giving it a test ride makes the decision a lot easier.*

All the e-bikes displayed at the Folkecenter **E-Mobility Center** has been tested by the center. The aim was to verify whether the range between charges as informed by the manufacturer was in accordance with real life performance. The test proved that the manufacturer's data were correct.

While choosing an electric bike you should pay attention to the types of batteries, bicycle use, battery life and how much they cost. A typical electric bike can run about 25 km on one charge, but others as much as 135 km. Lithium batteries for an electrical bike can be charged using a charger, similar to those used for mobile phones. The batteries can last for approx. 3 years.

It is best to use lithium batteries, rather than the old types, which have a high content of heavy metals and not last very long. There are two types of lithium batteries - lithium polymer and lithium ion. Lithium polymer is both the most efficient and environmentally friendly.

Before you buy an electric bike it is a good idea to try it, also without power on. Some models can be very difficult to ride without power and it can be a problem if it ever runs out of power. Most electric bikes are constructed so that the engine will turn off when the speed comes to about 25 km/h, but then you can also keep the pace, even if there is headwind or you are going uphill.

## PRICES

In Denmark the price of an electrical bike is between 5 - 15.000 Danish kroner. The price mostly depends on the size and efficiency of the bicycle's battery – bikes with better batteries cost more.







# E-MOBILITY CENTRE



*at the Folkecenter  
for Renewable Energy*

The **E-Mobility Center** at the Folkecenter displays fourteen electric vehicles:

**8 BICYCLES:** SCO (2008), Promovec Whistle (2012), Promovec Flick (2012), Winora C1 (2012), Mustang (2012), E-Bike HS-EBS 201 (2012), Kalkhoff Impulse (2012), Raleigh Classic De Luxe (2012);

**3 SCOOTERS:** Elvin (2005), Tante Paula Ferdinand II (2012), E-tropolis Retro (2012);

and **3 THREE-WHEELED TRANSPORTERS.**

The exhibited vehicles are used by the FC staff and trainees. The e-bikes and scooters can be tested by adult visitors interested in sustainable electric mobility.



## SCO el-cykel 2008

It is an older model but it still works good. With its classic design and easy handling it is favorable especially for older people.



Rækkevidde   Range	40 km
Træk   Features	Forhjulstrukket   front-wheel drive
Motor   Engine	250 W
Motor styring   Engine control	RPM sensor 4 pol
Batteri   Battery	Li-Ion
Batterikapacitet   Battery capacity	288 Wh
Ladetid   Charging time	3 timer   3 hours
Pris fra   Price from	8 000 DKK
Forhandler   Dealer	Bilka
Oprindelse   Origin	Danmark   Denmark/Taiwan



## PRO-MOVEC Whistle 2012

Designed and manufactured by a Danish company, it is a classic and sportive city e-bike. Its handling and design is aimed at midlifers.



Rækkevidde   Range	35 km
Træk   Features	Forhjulstrukket   front-wheel drive
Motor/styring   Engine/control	250 W / RPM sensor pole
Batteri/kapacitet   Battery/capacity	36V Li Ion / 324 Wh
Batteriets vægt   Battery weight	1,8 kg
Vægt   Weight	21,1 kg (excl. battery)
Ladetid   Charging time	6 timer   6 hours
Pris fra   Price from	15 995 DKK
Forhandler   Dealer	www.promovec.dk
Oprindelse   Origin	Danmark   Denmark





Danish design: classic, elegant and reliable. This is a lightweight city e-bike with easy handling and strong frame.



## PRO-MOVEC Flick 2012



Rækkevidde   Range	35 km
Træk   Features	Forhjulstrukket   front-wheel drive
Motor/styring   Engine control	250 W/ RPM sensor 6 pol
Batteri/kapacitet   Battery/capacity	36V Li Ion/252 Wh
Batteriets vægt   Battery weight	2,5 kg
Vægt   Weight	18 kg (excl. battery)
Ladetid   Charging time	5 timer   5 hours
Pris fra   Price from	6 999 DKK
Forhandler   Dealer	www.promovec.dk
Oprindelse   Origin	Danmark   Denmark

The new fully automated comfort and urban pedelec with revolutionary AGT (automatic gear transmission), an automatic effective speed control system.



## WINORA C1 AGT 2011

Winner EURO BIKE AWARD 2011



Rækkevidde   Range	110 km
Træk   Features	Forhjulstrukket   front-wheel drive
Motor   Engine	250 W
Motor styring   Engine control	Mionic BB med drejningsmoment sensor Mionic BB with torque sensor
Batteri/kapacitet   Battery/capacity	36V Li Ion/396 Wh
Vægt   Weight	26 kg
Ladetid   Charging time	6 timer   6 hours
Pris fra   Price from	15 999 DKK
Forhandler   Dealer	www.ecykler.dk
Oprindelse   Origin	Tyskland   Germany



# MUSTANG Adventure 2012

ADVENTURE - sportive men's e-bike from Mustang. The battery is discreetly integrated into the frame, so you barely notice it.



Rækkevidde   Range	30 km
Træk   Features	forhjulstrukket   front-wheel drive
Motor   Engine	250 W
Motor styring   Engine control	RPM sensor 12 pol
Batteri   Battery	36V Li Ion
Batterikapacitet   Battery capacity	313 Wh
Ladetid   Charging time	4-6 timer   4-6 hours
Pris fra   Price from	11 995 DKK
Forhandler   Dealer	Coop
Oprindelse   Origin	Danmark   Denmark



# WOSUN HS-EBS106 2012

Quite affordable but heavy (net weight 40kg) women's city e-bike made in China with practical solutions for carrying luggage or shopping.



Rækkevidde   Range	46 km
Træk   Features	Baghjulstrukket   rear-wheel drive
Motor   Engine	250 W
Motor styring   Engine control	RPM sensor 6 pol   RPM sensor 6 pole
Batteri   Battery	Bly   lead
Batterikapacitet   Battery capacity	432 Wh
Ladetid   Charging time	4-6 timer   4-6 hours
Pris fra   Price from	4 395 DKK
Forhandler   Dealer	www.mm-konsol.dk
Oprindelse   Origin	Kina   China







# KALKHOFF Impulse 2012

Impulse - the innovative E-bike system made in Germany with very long range: Centre motor system with back-pedal brake, complete range: Back-pedal or freewheel and new rear safety light included as standard. Motor and battery are integrated in the frame. The e-bike has progressive power assist, various ride modes, controlled start-up.



Rækkevidde   Range	135 km
Træk   Features	Krank baghjulstræk   rear-wheel drive
Motor   Engine	250 W
Motor styring   Engine control	Impulse Pedelec
Batteri   Battery	36V Li Ion
Batterikapacitet   Battery capacity	396 Wh
Ladetid   Charging time	4-6 timer   4-6 hours
Pris fra   Price from	17 499 DKK
Forhandler   Dealer	www.acsports.dk
Oprindelse   Origin	Tyskland   Germany

Retro city and country women's e-bike, with Danish design: adapted for Nordic wind and weather. Comfortable bike with 7 gears.

# RALEIGH Classic De Luxe 2012



Rækkevidde   Range	50 km
Træk   Features	Forhjulstrukket   front-wheel drive
Motor/styring   Engine/control	250 W/ RPM sensor 12 pol
Batteri/kapacitet   Battery/capacity	36V Li Ion/324 Wh
Batteriets vægt   Battery weight	2,7 kg
Vægt   Weight	23 kg (excl. battery)
Ladetid   Charging time	4-6 timer   4-6 hours
Pris fra   Price from	17 499 DKK
Forhandler   Dealer	www.raleighbikes.dk
Oprindelse   Origin	Storbritannien   Great Britain



# TRANSPORTER Hybrid 2012



Rækkevidde   Range	30 km
Træk   Features	Baghjulstrukket   rear-wheel drive
Motor   Engine	200 W
Motor styring   Engine control	RPM sensor 6 pol   RPM sensor 6 pole
Batteri   Battery	36V Li Ion
Batterikapacitet   Battery capacity	324 Wh
Ladetid   Charging time	6 timer   6 hours
Pris fra   Price from	12 999 DKK
Forhandler   Dealer	www.icykel.dk
Oprindelse   Origin	Tyskland   Germany



# TRANSPORTER Hybrid 2012

Perfect 3-wheeled e-bike for carrying kids or shopping on windy and rainy days, in the city and in nature.



Rækkevidde   Range	30 km
Træk   Features	Baghjulstrukket   rear-wheel drive
Motor   Engine	200 W
Motor styring   Engine control	RPM sensor 6 pol   RPM sensor 6 pole
Batteri   Battery	36V Li Ion
Batterikapacitet   Battery capacity	324 Wh
Ladetid   Charging time	6 timer   6 hours
Pris fra   Price from	12 999 DKK
Forhandler   Dealer	www.icykel.dk
Oprindelse   Origin	Tyskland   Germany







## NICOM e-moped 2005



Rækkevidde   Range	28 km
Træk   Features	Baghjulstrukket   front-wheel drive
Motor   Engine	500 W
Batteri   Battery	NiMh
Ladetid   Charging time	3 timer   3 hours
Pris fra   Price from	7 500 DKK
Forhandler   Dealer	Procure A/S Tandrupvej 5, 7700 Thisted DK
Oprindelse   Origin	Kina   China

Indregistreres som Knallert | Registered as moped

The ideal starter model for everyone with a moped or car driving licence (varying). Small and easy to fold to fit in the trunk.

## TANTE PAULA Ferdinand 2



Rækkevidde   Range	25 km
Træk   Features	Forhjulstrukket   front-wheel drive
Motor   Engine	500 W
Batteri/kapacitet   Battery/capacity	3 x 12V Silicium gel   Silicon gel/540 Wh
Vægt   Weight	28 kg (excl. battery)
Ladetid   Charging time	3-5 timer   3-5 hours
Pris fra   Price from	15 599 DKK
Forhandler   Dealer	www.solar-andresen.co
Oprindelse   Origin	Tyskland   Germany
Indregistreres som Knallert   Registered as moped	



# E-TROPOLIS Retro

Trendy driving pleasures in vintage design without losing sight of a clean future. Retro design true to the scooter generation's style.



Rækkevidde   Range	50 km @ 25°C
Træk   Features	Baghjulstrukket   rear-wheel drive
Motor   Engine	2000 W
Batteri   Battery	60V, 38 Ah Silicium
Batterikapacitet   Battery capacity	1620 Wh
Ladetid   Charging time	5-8 timer   5-8 hours
Vægt   Weight	140 kg
Pris fra   Price from	2595 DKK
Forhandler   Dealer	www.e-tropolis.de
Origin   Origin	Tyskland   Germany



# 3-wheeled moped with load 2005



Rækkevidde   Range	30 km
Tophastighed   Maximum speed	45 Km/t   45 km/h
Træk   Features	Baghjulstrukket   rear-wheel drive
Motor   Engine	250 W
Batteri   Battery	Bly   Pb (lead-acid)
Ladetid   Charging time	3 timer   3 hours
Pris fra   Price from	7 500 DKK
Forhandler   Dealer	Importeret   Imported from Hong Kong
Origin   Origin	Kina   China
Kan ikke indregistreres i Danmark   Can not be registered in Denmark	







1. Besøgsportal / Indgang og toiletter | *Entrance / toilets for visitors*
2. Vind-Brint Station | *Hydrogen filling station*
3. Biodomen | *Biodome*
4. Halmhus / Husstands vindmølle | *Strawbale house / household windmill*
5. SkibstedFjord Centret / Møder og konferencer / Solceller | *SkibstedFjord Centre / Meetings and conferences / solar cells*
6. Grøn Spildevandsrensning | *Waste water treatment*
7. "Plus Energi Hus" / Udstillingsmodeller af bl.a. bølgeomaskiner | *"Plus Energy House" / Display models of particular wave energy machines*
8. Vinge udstillinger | *Blade Expo*
9. Udstillingshal / Den moderne vindmølles historie | *Exhibition hall / History of modern wind turbines*
10. Teststation for solceller | *Test station for solar cells*
11. Genbrugshus | *Recycled Second-hand house*
12. Solvarme anlæg | *Solar Heating Demo*
13. "Rapseriet" | *Plant oil lab (rape seed)*
14. Energicentral: Integreret energi system, sol, vind, biomasse | *Energy Centre: Integrated energy system, solar, wind, biomass*
15. Hovedbygning / Café Solaire | *Main building with offices, reception, library / Café Solaire*
16. Center for E-Mobilitet | *E-Mobility Center*
17. Prøvestation for husstands vindmøller | *Small wind turbine test field*
18. Hanstholm vindmølle på 525 kW | *FC's 525 kW wind turbine in Hanstholm*
19. Nissum Bredning Prøvestation for Bølgeenergi | *Nissum Bredning Wave Energy Test Station*





## Nordic Folkecenter for Renewable Energy

Kammersgaardsvej 16, Sdr. Ydby

DK-7760 Hurup Thy | Denmark

Tel +45 9795 6600

Fax +45 9795 6565

Email: [info@folkecenter.dk](mailto:info@folkecenter.dk)

[www.folkecenter.net](http://www.folkecenter.net)