Annex XI: Electric Two Wheelers

31st October 2005, 15.00

JARI Symposium on Electric Vehicles

Tokyo Motor Show Symposium 2005

AVERE,
The European Association for Battery, Hybrid and Fuel Cell Electric Vehicles

- 11 national sections
- Indirectly over 500 members
- European network of industrial manufacturers and suppliers for electric vehicles
- Non profit-making association created in 1978 under the aegis of the European Union

Some key facts in Europe

- 2 trips on 3 are done per car
- Pedestrian and bike trips reduced by 33% between 1982 and 1994 and by another 33% during the last ten years
- Cycling commuting to work: 32% in 1959 – 14% in 1994 and 6% in 2004
- Half of the households has no bike
- Bicycles and scooters only used for 3% of the trips
- … in spite of increasing infrastructure's quality

However the trend is changing - Bikes

- Good sportive image
- Health concern
- Ecologically friendly (global and local)
- Noise pollution
- Costs of “traditional” trips
- Congestion

However the trend is changing - Scooters

- Costs of “traditional” trips
- Congestion

Weak points of traditional two-wheelers

- Bicycles: require physical effort
- Scooters: lots of noise and are air polluting (emissions far worse than those from cars)

Electric motorization is the solution

- Bicycles: reduced physical effort
- Scooters: no noise and no pollution on the spot (much lower than conventional cars on a global scale and possibility to run on renewable)
- The advantages of electric two-wheelers are obvious as they operate fully emission free, are silent and require much less road space than cars
- Therefore, these vehicles are a key factor in sustainable mobility for the city of tomorrow

Barriers

In order to be marketable electric two-wheelers have to compete in terms of performance, price, reliability and maintenance costs, with any existing gas version

Barriers - scooters

- Range of up to 45 km travel per single charge
  - Perfect for inner-city use by the urban commuter but problems when one needs to increase this range due to work or leisure reasons
- Recharging time
  - Fast charging (from an external D.C. source) could be an option, but scooters now on the market are not equipped for that
- Limited non-modifiable speed
  - The same argument applies for thermal mopeds which are limited to 40/45 km/h

Barriers – e-bikes

- Considered as targeting a group of people with reduced biking capacity
  - Bad image
- Assistance often considered as too weak in a number of cases and for some types of bicycles

Barriers – e-bikes (cont.)

- Legislative issues
  - EU-Directive 2002/24/EC of 18.3.2002 concerning the Type approval for two and three wheeled vehicles stipulates that “cycles with pedal assistance which are equipped with an auxiliary electric motor having a maximum continuous rated power of 0,25 kW, of which the output is progressively reduced and finally cut off as the vehicle reaches a speed of 25 km/h, or sooner, if the cyclist stops pedaling - are excluded from type approval”.

Barriers – e-bikes (cont.)

- Legislative issues (cont.)
  - In its current form, the directive hampers for the deployment on the European market of e-bikes exceeding an assisted speed of 25 km/h
  - E-bikes that exceed the technical specifications must have a type approval and are classified as “mopeds”, and must consequently abide by all additional laws, i.e. motorcycle helmet, adequate brakes, mirrors etc.
  - This confirms the image to be a "bicycle for elderly and less mobile people", particularly in countries where a strong bicycle culture exists

User’s satisfaction and complaints

- Avoid difference between marketing information and real performances
  - Once disappointed, the customer will no more trust the technology
- Need for good infrastructures like cycle paths and secured charging points
- Price of the electric two-wheeler
  - Need to provide the market with attractively priced products. This might be possible if mass production levels were achieved.
- Weight,
  - Especially for e-bikes where users have to take them to their flat upstairs when no suitable storage space is available

User's satisfaction and complaints (cont.)

- The appreciation of the tested e-bikes is highly dependent on the site specific mobility culture.
  - E-Tour project: in most sites they were well appreciated, but in Holland electric power assisted bikes were not very well appreciated by the majority of the sites population,
  - This also proves that the electric bicycle is certainly not a simple alternative for normal bikes but a new mobility means, which has still to conquer its own market share
- Low service costs
  - Mainly due to the relatively simple maintenance
- Considerable savings in fuel costs

Expectations from the manufacturers

- For future applications, the product improvement of electric two-wheelers is crucial, in particular more reliable and better performing batteries
- The price of e-bikes and e-scooters remains an obstacle. This also concerns mainly the price of batteries
  - Better products could lead to higher sales, which would result in lower prices
  - Although better and more reliable batteries will tend to push prices up when produced
  - Rental promotions and discounts

Expectations from the manufacturers

- To avoid too optimistic figures
- For e-bikes, new developments leading to products with a high emotional added value (daring but functional designs). The positive health effects when using power assisted electric bicycles should be wisely exploited
- For specific niches, like postal services and municipal maintenance further development of power assisted three-wheelers
- For e-scooters, developments for specific niches like courier services and meal deliveries can be of great importance for showing the public these alternative transport means

Expectations from the public authorities (all levels)

- To emphasize their desire for a future with clean vehicles
- To introducing beneficial incentives for buying as well as using them
- To favor areas, closed to ICE vehicles, like city centers and other environmentally sensitive areas like small islands that are a perfect setting for the use of electric two- and three-wheelers
- To demonstrate the suitability of these vehicles as a practical mobility means in urban and/or other restricted areas

Expectations from the IEA task force

- To foster the market take off
- To analyse factors favouring or hindering electric two-wheelers introduction and use
- To create synergies to help manufacturers entering into new markets
- To foster emergence of new manufacturers
- To increase public awareness of electric two wheelers
- To develop best practices and the role of cities
- To foster cooperation and coordination in market introduction

Worldwide e-bikes sales (est.)

	2002	2003	2004	2005	2006
China	1 600 000	4 000 000	7 500 000	9 500 000	12 000 000
Japan	185 000	190 000	194 000	197 000	200 000
Europe	70 000	90 000	105 000	115 000	125 000
Taiwan	10 000	12 000	13 000	14 000	15 000
SE Asia	15 000	18 000	21 000	24 000	25 000
United States	10 000	15 000	25 000	45 000	55 000
Total	1 890 000	4 325 000	7 858 000	9 895 000	12 420 000

Electric Bikes Worldwide Reports 2004, Frank Jamerson and Ed Benjamin

Worldwide LEV sales (est.)

	2002	2003	2004	2005	2006
China	30 000	40 000	50 000	60 000	70 000
Japan	20 000	25 000	25 000	25 000	25 000
Europe	18 000	39 000	55 000	65 000	80 000
Taiwan	15 000	7 000	10 000	9 000	9 000
SE Asia	10 000	10 000	20 000	30 000	40 000
United States	350 000	1 500 000	2 000 000	2 200 000	2 300 000
Total	433 000	1 621 000	2 160 000	2 389 000	2 524 000

Electric Bikes Worldwide Reports 2004, Frank Jamerson and Ed Benjamin

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