



Annex XI: Electric Two Wheelers

Workshop Monaco

April 6, 2005, 14:00 – 17:00

Minutes

1 Electric Vehicle Symposium EVS-21

The workshop was following the 5 days Electric Vehicle Symposium EVS21 including a 2 ½ days conference, an exhibition and a Ride&Drive. A promising selection of electric two wheelers from power assisted bicycles up to high performance fuel cell motorcycles in different market stages (prototypes to mass production) was one of the highlights of EVS-21. They will face new technology challenges and require new marketing strategies. Thus, they justified the international collaboration proposed in Annex XI.

2 Participants of the workshop

34 experts from 17 different countries participated in the workshop. They belong to the following sectors:

Industry:	18
University:	6
Policy:	4
Media:	3
IEA, HEV Annex XI:	3

3 Presentations

3.1 The International Energy Agency (Urs Muntwyler, Chairman of the Implementing Agreement for Electric and Hybrid Vehicles)

The International Energy Agency (IEA) is an autonomous organisation that was founded in 1974. Today 26 countries are joining. It is focussing on the three following aspects:

- . Energy supply security
- . Emission reduction
- . Economic development

The IEA brings together policy-makers and experts through its Working Parties and Experts Groups and provides a legal framework for international collaborative research projects, known as Implementing Agreements (IA). Currently, 36 Implementing Agreements are running.

For further information see www.iea.org.

The objective of the **Implementing Agreement for Hybrid and Electric Vehicle Technologies and Programmes (HEV)** is to provide governments, local authorities, large users and industries with reliable information on electric and hybrid vehicles and their effects on energy efficiency and the environment, by means of various general studies, assessment, demonstrations, comparative evaluations, industrial opportunities, and so forth. At this moment, the following issues are treated in so called Annexes:

- I Information exchange,
- VII Hybrid vehicles,
- VIII Deployment strategies for hybrid, electric and alternative fuel vehicles,
- IX Clean city vehicles,
- X Electrochemical storage.

Presently, members from the following 9 countries are participating in one or more of the Annexes: Austria, Belgium, Finland, France, Italy, The Netherlands, Sweden, Switzerland and the United States of America.

3.2 Workplan Annex XI (Urs Schwegler)

The interim Operating Agent presented the current draft version of the Workplan (see www.ieahev.org) including some specifications as illustration of the work method, e.g.:

- Vehicle inventory (Subtask 1): The objective is to get an overview on the existing technologies including the corresponding vehicle specifications. In addition, a rough estimation on the annual sales should serve as a base for the assessment of the environmental benefits of the electric two wheelers in order to justify a governmental support.

- E-Bike-Centres: Based on the fact that a lot of conventional bicycle and motorcycle dealers are not used to electric drive trains, E-Bike-Centres should become a marketplace for local networks. Customers could find there a large selection of vehicles and competent advice, Cities, utilities and other sponsors could use this place for creating a positive image, and even the conventional dealers could benefit of a professional support. However there are some concerns on the location (city centre with high rental costs or suburban districts), additional products to offer, the collaboration between suppliers, level of standardization of corporate design in one country and the financing, of course.
- The benefits for governments in participating in Annex XI are manifold:
 - Learning from the experience in other countries and cities,
 - Present programmes to an international audience by hosting meetings,
 - Cooperate with domestic industry in market introduction,
 - Insight in worldwide technology state of the art and trends,
 - Finding arguments for justification of support,
 - Learning from two wheeler technology for big vehicle applications.
- Partners coming from the industry can expect similar benefits in participating in Annex XI:
 - Insight in worldwide technology state of the art and trends,
 - Present the company to a wider audience by hosting technical visits,
 - Contact to industry partners,
 - Contact to governments,
 - Worldwide market overview,
 - External conditions for market introduction in foreign countries,
 - Market success factors.
- Organisation: AVERE, the European Association for Electric Road Vehicles, represented by its Secretary, Frederic Vergels, has applied for Operating Agent for Agent XI.
- Schedule: The official launch of Annex XI, which was originally planned for summer 2005, has to be postponed, because of a lack of leaders for some subtask.

3.3 The WaveCrest experience (Ed Benjamin)

USA law considers e-bike as bicycle, if motor is less than 750 W and top speed 20 mph.

Basically WaveCrest is focused on unique motor technology. To demonstrate the motor, a platform was needed. Electric bicycles were chosen due to perceived lower barriers to entry.

Technology issues are manifold: Control, feel, power, torque, energy storage, reliability, quality etc.

Series production started with small quantities for military and police applications.

Distribution channels are crucial. Several approaches have been tested: Dealers, direct sales, mass merchant. Finally e-bikes are sold only via dealers.

WaveCrest is moving into international markets by a partnership with Matra (F).

3.4 The Yamaha experience (Marijke van Wersch)

Since the early nineties Yamaha has been marketing bicycles with electrical assistance, the PAS, both as CBU products as well as OEM.

The first YAMAHA electrical scooter, the PASSOL, was introduced on the Japanese market in November 2002. It was made on a different concept from the conventional scooter with the aim of creating new demand.

The concept of an “Urban Minimal Commuter” using clean electric energy as its power source to offer a quiet, zero-emissions ride with ease of use that is ideal for short-distance use in the urban environment.

A customer research carried out at some private test persons resulted as follows:

- Ease of use: Appealing to non PTW (Powered Two Wheeler) customers,
- Autonomy of 20 km/h is not enough. Customers expects 50 km, better 100 km.
- Purchase price should be less than 2'000 Euro.
- Hill climbing ability is not sufficient.
- Loading space would be appreciated.

For 2005 – 2006 a test marketing with 100 test marketing customers will be done in selected European areas. The customer monitoring will include Interviews (group and individual), a website Passol Forum (restricted access for customers with password) and feedbacks from dealers.

3.5 The Rome experience (Fabiana Marconi, ATAC)

The activities of Rome are based on several legislations, e.g. the Act of the Ministry for Environment promoting sustainable mobility in urban areas (1998).

They started in 2000 with a Park&Ride system in two big parking lots in and outside the historic City centre, where car drivers could park the car and rent an e-scooter at favourable conditions to get into the City centre. Despite a huge awareness campaign the demand for the 400 scooters was behind the expectations, due to the following reasons: Roman people generally don't like to rent, they might have had emotional reluctance to this new kind of vehicles and there were at the time no public charging stations existing. In spring 2002 the municipality stopped this rental phase at the parking lots and some of the scooters were offered to Hotels in the City centre for free rentals for tourists.

With a further new municipal Act e-scooters are being donated to several departments of the Municipality, Onlus, private Companies, Universities and Hospitals.

With dedicated awareness campaigns and surveys at students and children, the Municipality improved the awareness of the youth regarding electric scooters.

Finally, the Municipality provides since 2000 subsidies to private and commercial residents of Rome for the purchase of electric vehicles (Euro 3000 starting from year 2000). Thanks to this, 3'500 e-bikes and 1'000 e-scooters have been sold within four years.

The City of Rome will continue supporting market introduction of electric two wheelers, e.g. with additional public charging stations or with an "e-mopeds only" area in the historic City.

3.6 The Taiwan experience

With more than 10 millions registered units (at 23 millions inhabitants), motorcycles are the most popular vehicles for daily transportation in Taiwan.

Electric Scooters were promoted during 1995-2002 (around Euro 1000 per vehicle). When subsidize was canceled in 2003, sales dropped rapidly.

Electric pedelec gets NT\$3000 (Euro 80) subsidize since 2001. There are over 13000 sold so far by ten domestic makers.

Manufacturers of mini-scooter and small e-scooter are trying to persuade the Department of Transport (DOT) accepts such vehicle legally on road. DOT may tend to let it go and open to the drivers of age from 16 to 18 without driving license. This may create a huge market in the future. Such vehicle is categorized as "Small Light Electric Scooter" with top speed under 30kph, max weight under 60kg and max power output less than 1kW.

Taiwanese government is supporting the market introduction in various fields:

1. Find out what customers need, encourage scooter makers to develop real popular LEVs which can supersede traditional ICE scooters
2. Technology assistance on quality improvement to gain customer confidence on LEVs
3. Establish and promote product standards such as inspection codes and communication protocols
4. Conduct new segment products demonstration fleet to understand infrastructure requirement and customer acceptance
5. Set up LEV web site as market and technology information exchange platform
6. Conduct forum, exhibition and test ride to promote LEV, maintain market vitality and strengthen public awareness.

4 Conclusions of the workshop

Lobby activities at authorities for subsidies as long as electric two wheelers are not yet commercial.

Joint research activities: customer profile, customer needs.

Joint promotion activities for electric two wheelers.

Distribution research: what is most suitable network for electric two wheelers?

Outstanding people hardly understand the organisation structure of the IEA.

Industry has little confidence in collaboration with governmental organisations.

Advantages of electric two wheelers not clear from customers' perspective.

Unclear specifications and vehicle categorization confuse customers.

Different homologation standards complicate developments of new vehicle models.

Emission standards for ICE motorcycles and increasing fuel prices will favour electric two wheelers.

Technology does not sell: Customers need reassurance that the products can satisfy their needs, they don't care about technology.

Fill the gap between demonstration and free market with early customers such as police, military etc.

Electric drivetrain requires new vehicle type „Small light electric scooter“ (Taiwan)

Huge variety of supporting measures for governments:

- . Product standards, homologation,
- . Regulations (restricted access to inner cities etc.),
- . Basic, independent information (websites etc.),
- . Demonstration projects,
- . Electric two wheelers in governmental fleets (shining example),
- . Infrastructure,
- . Exhibitions with Ride&Drive,
- . Cooperation with suppliers (manufacturers, importers, dealers).

5 Meeting of the Executive Committee

The day after the workshop, the Executive Committee of the HEV (which will launch Annex XI – or not) discussed the current state of Annex XI. The name of the Annex XI is not precise, at least not according to European legislation. There, light vehicles with three or four wheels are classified the same as scooters and motorcycles. The criterion is the vehicle weight (not more than 400 kg).

The current version of the workplan is too much focussing on marketing. Technology issues (Subtask 3) should be specified more in detail.

Annex XI could contribute to the further development of advanced batteries, as the application in two wheelers is less challenging than in big vehicles.

In some countries like the Netherlands, e-bikes just replace conventional bicycles. In this case, a justification for governmental support is hard to find.

6 Next steps

End of April Minutes of Monaco Workshop to participants and online on HEV website

End of Mai Amendment of workplan

Call for Subtask leaders (on invitation)

On demand Further newsletter to contact group

Oct. 05 Asian Workshop at Tokyo Motor Show?

Dec. 05 American workshop at EDTA conference, Vancouver (Ca)?

Fischingen, 28 April 2005

Urs Schwegler

Interim Operating Agent