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Chances and Barriers for Electric Scooters

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Abstract

After the successful market introduction of e-bikes, electric scooters could become the next segment of electric vehicles. Some success factors from the e-bikes can be transferred to the e-scooter segment. However, there still remain some barriers: the most important one might be the commitment of the motorcycle dealers.

Topics: Scooters, Market, Incentives, Promotion

1 NewRide, the Swiss Association for the promotion of electric two wheelers [1]

Since 2001, NewRide, a Swiss association for the promotion of electric two wheelers, is pushing the market introduction of electric bicycles and scooters. It is supported by the Swiss Government, by some 30 cities and the vehicle suppliers (manufacturers, importers and dealers). Therefore, NewRide can be considered as an intermediate between the policy who is calling for clean vehicles, and the suppliers, who are offering them, but don't have the means for a successful marketing. As an independent organisation, NewRide has some favourable conditions for making the market introduction fast and sustainable: It has a high credibility for customers as well as for the media, it can assist governments in developing and implementing favourable conditions for the market introduction, and last not least it can disseminate neutral information not only on products and makes, but on technology in general (which is essential at this early state of market introduction).

To improve the awareness and the credibility of electric two wheelers NewRide is organizing roadshows with free test rides for the public.

In the first seven years, NewRide has successfully assisted the market introduction of e-bikes (see fig. 1). While the sales in the first years developed only slowly, they increased rapidly from 2005. In 2011 one of seven bicycles sold in Switzerland was equipped with an electric motor.

In the same period, the sales of e-scooters remained at a low level. In 2011, 1'100 units have been sold in Switzerland. However, this segment is considered to become a next step towards the market introduction of electric mobility, because the requirements, namely on the range (and therefore on the battery capacity, cost etc.) is lower than for passenger cars.

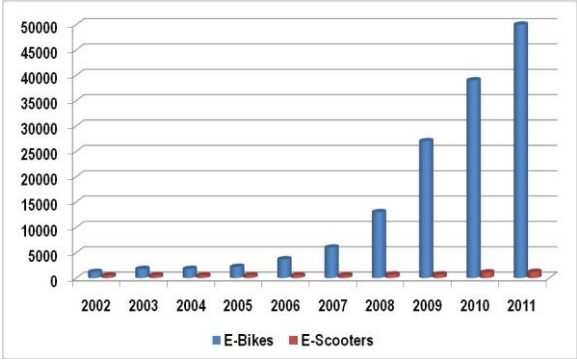

Figure1: sales development of e-bikes and e-scooters in Switzerland

2 A Huge Variety of E-Scooters

The term “e-scooter” is legally not defined. In this paper, it is used for two- and three-wheel electric vehicles with an electric drive train except electric bicycles. Compared to conventional motorcycles and mopeds, these vehicles offer significant benefits regarding energy consumption, greenhouse gas and air pollutant emissions as well as noise emissions. Fig. 2 shows a selection of vehicles that cover the range of "e-scooters".

Figure2: A huge variety of "e-scooters"

3 The Swiss Research Project "E-Scooter"

A Swiss research team lead by the University of Berne and supported by the Swiss Government is analyzing the barriers for market introduction and developing ways to overcome them [2]. The project started in 2009 and will last until 2013. It covers six work packages (see fig. 3):

Figure 3: Research Project "e-scooter": 6 work packages

4 Barriers for the Market Break-through of E-Scooters

Some key factors which are responsible for the success of the e-bike boom, are still missing in the e-scooter segment:

- The global motorcycle manufacturers haven’t started yet volume production of e-scooters, although they are developing them since several years. The actual e-scooter manufactures - not famous brands – first have to prove their confidence. Unfortunately some of them misjudge the time and investment for developing and introducing new vehicles on the market. As a consequence, they get the image of not being serious and harm the reputation of the technology. Therefore there is a need for neutral and reliable information. Target groups of the corresponding communication are not only the buyers of e-scooters, but, much before, dealers and the media. Communication tools include market overviews, websites, press releases, exhibitions (with test rides, if possible), further training, etc.
- As a consequence of the absence of the global motorcycle manufacturers, most of the motorcycle dealers are not yet ready to selling e-scooters. In addition, more than a half of them have contracts of exclusivity with their brands which forbid the selling of other brands. Therefore, the new e-scooter manufacturers cannot rely on existing motorcycle dealers. They have to establish new distribution networks. The internet may be an important information tool for the consumers, but today it

cannot replace the personal support by a professional dealer.

- Charging infrastructure: At most of e-scooters, the battery cannot be removed for charging. If charging isn't possible at home or at work, there is a need for public charging facilities. Unfortunately, the requirements differ in two important aspects from those for electric cars: First, there is no need for special connectors, because the electrical power of the usual household sockets are sufficient for the charger of e-scooters. The second difference concerns the parking field. Motorcycles are not allowed to be parked on parking fields dedicated for passenger cars. That means, that there is need for a special kind of charging facilities for electric scooters – in addition to those for electric passenger cars.

5 ... and Chances

Despite of these barriers and the poor sales figures in the past, there is hope for a market breakthrough in the coming years:

- Some big motorcycle manufacturers (BMW, Honda, Peugeot, Yamaha) announced the commercialisation of e-scooters in 2012 or 2013.
- Thanks to the roadshows organized by NewRide, the interest in e-scooters has increased in the last years. Since 2009 NewRide presents at Swiss-Moto in Zurich, the most important motorcycle fair in Switzerland, a special show ALL ELECTRIC. In 2012, this show included 18 exhibitors and a indoor test track of 150 m.

Figure 4: ALL ELECTRIC at Swiss-Moto 2012

- The Swiss Postal Service started to replace its 7'000 conventional scooters by e-scooters. Today, more than 1'000 Oxygen cargo scooters and 500 Kyburz DXP are already in service. Although the purchase price is significantly higher than for a conventional scooter, the Postal Service considers these vehicles as cost efficient, mainly due to two reasons:
  - Conventional scooters use to be replaced after 3 – 4 years. After 4 years experience with the first e-scooters, the Postal Service realized that first the battery capacity still meets daily requirements and secondly the mechanical parts of the e-scooters are more reliable than for conventional ones. Therefore, the lifetime of e-scooters is expected to be significantly higher as for conventional scooters.
  - With the higher payload the Postal Service can manage longer delivery tours in one day. That helps to save personal cost.

Figure 5: Kyburz DXP, a three wheel e-scooter for goods delivery

6 Conclusions

There is huge variety of new vehicle concepts which belong to the category e-scooters. Therefore, the potential might be much higher than just replacing the conventional scooters.

Some experiences by the successful market introduction of e-bikes can be transferred to the e-scooter segment. However, there still are to important barriers for e-scooters, namely the absence of the global motorcycle manufacturers, the distribution networks and the charging infrastructure.

Test ride opportunities for the public might be essential for the market success, as people can't imagine the fun to drive the innovative vehicle concepts without having driven them.

The Postal Service, replacing conventional scooters consequently by e-scooters, my improve the image of the e-scooter technology in general.

References

[1] www.newride.ch

[2] http://www.ikaoe.unibe.ch/forschung/e-scooter/index.html

Authors

Urs Schwegler has studied civil engineer at the technical high school of Zurich. He is head of a transport-tation consultant office. Since 1990 he is working in the field of electric vehicles. On the international level he was involved in several research and demonstration projects of the EU and the International Energy Agency IEA. On the Swiss national level he is partner of the associations e'mobile (the Swiss section of AVERE) and NewRide, the Swiss national programme for electric two wheelers.