Categories of Driving Behaviour and Charging Needs

Due to the fair energy density of battery storages compared to liquid fossil fuels the charging behaviour of electric vehicles will be completely different to conventional refuelling. The need for charging results from the covered distances per day or at least per a part of one way. Three categories can be observed:

- One day charging (low power level sufficient)
- Destination charging (low power level sufficient)
- Pathway charging (quick charging required)

Power Control Mechanisms

To influence the charging process, different ways can be chosen.

- One possibility is to adapt the charging power level immediate-ly at the charging device.
- Another way is to switch on and off the charging process shifting thereby the time of charging of single or groups of vehicles.

In total the reasons for power control are varying. Charging demand should be levelled

- avoiding additional power peaks,
- keeping grid characteristics inside borders and/or
- using renewable energy sources immediately.

Project Outlook

The ongoing project (09/2009 until 07/2011) will cover the following topics in the upcoming months:

- Stand space evaluation
- Power balancing for whole year consideration
- Charging infrastructure selection and growth assessments
- Market and potential survey
- Whole system consideration
- Development of recommendations for action

Methodology

The project follows a bottom up approach for analysis. Firstly, the consumer behaviour is observed with GPS-Tracking of driving cycles of 34 conventional vehicles over three weeks. The results serve for the generation of daily consumption profiles of electric vehicles, when same user behaviour is assumed facing the shift of the drive train system. Together with the stand space results, charging infrastructure concepts can be selected. This information enables the development of charging strategies and of grid integration aspects.

Project Details

Three scientific partners are forming the project team: Vienna University of Technology (EAEW), Austrian Institute of Technology (EIT), University of Natural Resources and Applied Life Sciences (VBIW). This project is funded by the Austrian Climate and Energy Fund within the programme „Neue Energien 2020“.

Christoph Leitinger, MSc
Project assistant / Research
E: leitinger@ea.tuwien.ac.at
T: +43 1 58801 37335

Vienna University of Technology
Institute of Power Systems and Energy Economics
Gusshausstr. 25 / 373-1, 1040 Vienna, Austria
http://www.ea.tuwien.ac.at