

**Press Release 002/2009**

## **Electric Cars as Energy Storages**

### **In the “Flottenversuch Elektromobilität”, KIT Researchers Focus on the Integration of Renewable Energies**

**KIT researchers participate in the Germany-wide large-scale project “Flottenversuch Elektromobilität”. This project was initiated by the Federal Environmental Ministry, together with Volkswagen and EON. It is carried out jointly with partners from industry, universities, and other research institutions. The objective is to develop and test innovative electric vehicles as well as to study the impacts of this technology on the energy system. KIT scientists analyze the effects of electromobility on the existing power plants and transmission grids. In particular, the focus is put on the integration of renewable energies.**

The experiment that is funded with EUR 32.5 million for a duration of four years is aimed at further developing the plug-in hybrid and electric vehicle technology. “From the technical point of view, the range, charging times, and service lives decide on the dissemination of alternative propulsion systems. However, also costs and climate policy factors are crucial to the success of a technology in a worldwide competition”, says Dr. Dominik Möst from the Chair for Energy Economy of the KIT Institute for Industrial Production. Möst’s working group “Energy Systems Analysis and Environment” is already analyzing the integration of renewable energies in the European energy system and the effects of emission trading on the development of energy markets for several years.

Apart from conventional combustion engine for propulsion, hybrid vehicles are equipped with an electric motor and a battery that can be charged via a socket or a quick charging station. The battery supports the combustion engine in acceleration, but is also supposed to recover braking energy. The plug-in hybrid technology is interesting on short distances, for instance, in urban traffic, as it allows for exclusively electric driving and, hence, is expected to significantly reduce the consumption of gasoline.

In the electromobility fleet test, researchers from Karlsruhe mainly focus on the long-term impacts of electromobility on the existing power plants, transmission grids, and the energy supply system in Germany and Europe. “In particular, we wish to study the extent to which electromobility may be a possibility to store energy in the next three decades in Germany”, underlines Möst. “Developments like the vehicle-to-grid (V2G) technology might relieve electricity grids and production peaks.” The idea is that electricity is stored in electric or hybrid cars. Such vehicles may store electricity from the grid in times of demand peaks. In off-peak periods, they may feed electricity back into the grid.

“Above all, we want to determine the extent to which electromobility may contribute to a better integration of renewable energies from fluctuating energy sources like wind and solar power”, explains Dominik Möst. Due to their fluctuating characteristic, wind and solar energy are not capable for covering base load consumption contrary to geothermal energy or biomass. As a result, a surplus of electricity exists in the grid at certain times. “In case of insufficient transmission capacities, these grid congestions may be an obstacle to the use of local and temporally varying energy sources. By storing this excessive power at times of peak production, the transmission grid could be relieved and this energy could be used”, says Möst. First results will be available by the end of 2009.

**The Karlsruhe Institute of Technology (KIT) is the merger of the Forschungszentrum Karlsruhe, member of the Helmholtz Association, and the Universität Karlsruhe. This merger will give rise to an institution of internationally excellent research and teaching in natural and engineering sciences. In total, the KIT has 8000 employees and an annual budget of 700 million Euros. The KIT focuses on the knowledge triangle of research – teaching – innovation.**

**The Karlsruhe institution is a leading European energy research center and plays a visible role in nanosciences worldwide. KIT sets new standards in teaching and promotion of young scientists and attracts top scientists from all over the world. Moreover, KIT is a leading innovation partner of industry.**

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