

# MeRegioMobil: Electric Vehicles in an Intelligent Energy Grid

On the Premises of KIT a Smart Home Is Set up as Demonstration Lab



*Under construction: The smart home on the premises of KIT.  
(Photo: Gabi Zachmann)*

**Integrating electric vehicles as mobile power storage in the energy system by innovative information technologies, this is a major objective of MeRegioMobil. KIT is a major partner in this project funded by the federal government. On Campus South of KIT, a smart home is being built, which integrates electric vehicles as power storage and consumers in the intelligent control of the household. The first test inhabitants will move in this summer.**

The building with an area of about 60 square meters has already been set up. Presently, the interior work is done. Among others, the smart home is equipped with typical household appliances, such as a washing machine, a dishwasher, and a refrigerator. Electricity will be produced by a photovoltaic system and a micro cogeneration system. Via a charging station, electric vehicles are integrated as storage and consumers. During low-demand periods, the battery of the vehicle can take up excessive power and feed it back into the grid when demand is high. In this way, load peaks are compensated and regenerative energy from fluctuating sources can be integrated in the energy grid.

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Innovative information and communication technologies play a key role in the MeRegioMobil project. Apart from the laboratory test facility it will include a large-scale field test in the areas of Karlsruhe, Stuttgart, and Kehl as well as simulations and evaluations. "The challenge mainly is to reasonably balance the sometimes conflicting interests of vehicle and house owners and utilities and grid operators, especially as far as the use of personal data on the consumption of electricity is concerned", explains Professor Hartmut Schmeck, spokesman of the project at KIT.

MeRegioMobil is executed by a consortium of scientific institutions and industrial companies under the direction of EnBW Energie Baden-Württemberg. The partners are Daimler, Opel, Bosch, SAP, the Municipal Utility Company of Karlsruhe as well as KIT and the Fraunhofer Institute for Systems and Innovation Research (ISI). Eleven KIT chairs are involved and contribute their competencies in applied and theoretical informatics, software design, law, energy economics, electric energy systems and high-voltage technology, electrical engineering, telematics, and information management. The MeRegioMobil project is among the most important research and development projects of the KIT-Focus COMMputation addressing the inherent combination of communication and computation. In addition, MeRegioMobil is integrated in the KIT-Center Energy and the KIT-FocusMobility Systems. Together with the cooperative project "Electrochemistry for Electromobility" to develop high-performance batteries and the KIT e-Drive project, MeRegioMobil demonstrates the high expertise of KIT in the field of electromobility.

MeRegioMobil is aimed in particular at developing innovative software architectures, business models, and incentive systems, conceiving methods for the cooperation of laboratory components, and studying and designing intelligent charging strategies and novel energy-relevant telematic services. Compared to other electromobility projects, MeRegioMobil is characterized by interdisciplinarity, feeding of electricity back into the grid, integration of navigation data, close cooperation with automotive industry, and so-called roaming: Based on his electricity supply contract, the customer can use the charging infrastructure also in other grid areas.

The Federal Ministry of Economics and Technology (BMWi) funds the project under the initiative "Information and Communication Technology for Electromobility". MeRegioMobil was one of the consortia winning the corresponding competition. At the Hanover Fair from April 19 to 23, KIT will present its MeRegioMobil activities at the BMWi booth on e-Energy

**Karlsruhe Institute of Technology (KIT) is a public corporation and state institution of Baden-Württemberg. It fulfills the mission of a university and the mission of a national research center of the Helmholtz Association. KIT focuses on a knowledge triangle that links the tasks of research, teaching, and innovation.**

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