iZEUS - intelligent Zero Emission Urban System

SMART GRID & SMART TRAFFIC - SERVICES FOR ELECTRIC MOBILITY

http://izeus.kit.edu
Also visit us at
http://meregiomobil.forschung.kit.edu

Interdisciplinary Competencies

Eleven chairs of economics, informatics, electrical engineering, and information technology

- Efficient Algorithms and Organic Computing
- Knowledge Management
- Software Design and Quality
- Energy Information Law and Legal Computer Sciences
- Energy Economics
- Information Systems and Management
- Decentralized Systems and Network Services
- Telematics
- Algorithmics (Theoretical Informatics)
- Electric Energy Systems and High Voltage Technology
- Electrical Engineering

Energy Smart Home Lab

- Intelligent charge management with an electric vehicle capable of feeding electricity back into the grid based on the new ISO/IEC 15118 standard
- Optimization of the load profile by smart control of electric/thermal household appliances and an electric vehicle capable of feeding electricity back into the grid based on an adaptive energy management system (EMS)
- Living phases to validate optimized and user-friendly EMS approaches, the focus lying on the exploitation of the user’s energy flexibility and the execution of acceptance studies
- Quick charging of electric vehicles without adversely affecting the grid by using additional stationary energy stores
- Development of a charge current converter to test power factor correction and use of an H-bridge for simulation of several (instable) grid situations
- Further development of incentive concepts for the optimum use of renewable energies in connection with electric mobility

Objectives of the Fleet Tests

- Development and supply of an open mobility services platform as an interface and data exchange system for the fleet test
- Conceptual design and test of various value-added mobility services, such as energy-efficient routing, finding and reservation of nearest charging stations or visualization of the remaining driving range
- Development of a smart phone app as an interface between users and the services platform for interactive participation in the field test
- Technical and economic analysis of the energy system and sociological research into customer acceptance and user behavior in the fleet test (the focus lying on commercial traffic)
- Analysis of legal and economic boundary conditions in terms of data protection, calibration legislation, and law of evidence relating to the demand side management of electric vehicles as well as derivation of recommendations for action