

GridSurfer

Taking electric mobility into the countryside
Integrating electric vehicles in rural energy systems – battery change included

Electric mobility makes sense – and not just in metropolitan areas. The GridSurfer project analyses the use of electric mobility in the largely rural region between the Ems, Weser and Elbe rivers. This region poses specific challenges to electric mobility while also offering great opportunities for the use of electric vehicles thanks to the high availability of renewable, fluctuating sources of energy.

GridSurfer will develop and field-test key components of electric mobility systems and their interfaces, including storage and charging stations; metering and control systems; ICT-based storage management, billing, and marketing processes; as well as fee systems and business models. The project will also place a particular emphasis on the development of information and communication systems for electric vehicles. For this purpose, six vehicles will be built and outfitted while undergoing continuous development and fine-tuning.

An additional priority will be placed on developing and testing a system for changing batteries in order to solve the problem of vehicle range. While quickly restoring mobility to drivers, this system will also make it possible to integrate high levels of storage capacity into the power grid.



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Harz.EE-mobility

Harnessing the wind and the sun to make people mobile
Electric cars as rolling energy storage units

In Germany's mountainous Harz region, alternative energy sources already account for half of the area's power generation. The Harz.EE-mobility project aims to harness as much of this renewable energy as possible to enhance passenger mobility. By doing so, the project also aims to ensure the stability of energy networks, to boost economic performance, and to foster energy security and climate protection. An intelligent ICT-based system is used to calibrate the energy supply in accordance with the existing power grid and individual mobility needs. Harz.EE-mobility demonstrates how drivers of electric cars can fuel up on carbon-neutral electricity without regard to network area or power provider. The ICT-based system will help drivers to plan their driving routes in accordance with the state of charge of their vehicle batteries and to make optimal use of the charging stations available along the way. The project is also committed to using open and internationally standardised interfaces that allow the newly developed technologies to be quickly and efficiently disseminated beyond the test region.

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www.harzee-mobility.de



MeRegioMobil

When washing machines talk to cars
Electric vehicles as mobile energy storage units in smart home energy management systems

If you want to sell electricity, drive a car. The electric cars of tomorrow will not only be emission-free but will also be capable of being integrated into existing energy networks, and this will enable them to function beautifully as mobile energy storage units.

Within the framework of the MeRegioMobil project, excess energy generated by electric vehicles will be stored in batteries. When these batteries are hooked up to home energy supply systems, the excess energy drawn from electric vehicles can be used to power household appliances or can even be fed into the power grid.

Another key priority of the project is to develop an electric vehicle charging infrastructure for the federal state of Baden-Württemberg and to field-test this infrastructure by the end of 2011. The charging infrastructure will aim to provide uniform billing procedures with different energy providers and to establish a smart charging communication system that can function effectively across borders and across different charging technologies.



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Smart Wheels

Taxi Drive with E-Power
Smart electric mobility in the model region of Aachen

Go for a spin on your e-scooter, take an electric bus to work, or go shopping with your electric car – naturally and easily. The Smart Wheels project researches and develops business models and convergent ICT services to integrate electric vehicles into smart grids and public utility infrastructures. One of the project's main priorities is to develop a concept that encompasses various vehicle types (electric buses, cars and scooters) to take optimal account of the issue of limited vehicle range. Within this concept, electric scooters are to be used to cover individual transport needs in city traffic (short distances). Electric cars are to be used primarily in city traffic and for regional travel (short and intermediate distances). As a third element in the equation, electric buses cover the area of public transport, which has its own specific characteristics (maximum need for planning).

The planned field test with electric vehicles will be carried out in the E-Energy model region of Aachen (the Smart Watts project). The project is also being conducted in close coordination and cooperation with the eE-Tour Allgäu project.



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www.smartwheels.de



Information policy, information society, telecommunications

ICT for Electric Mobility

www.ict-em.com

Information and Communication Technologies (ICT) for Electric Mobility

“ICT for Electric Mobility” is a support programme operated by the Federal Ministry of Economics and Technology (BMWi) in interdepartmental cooperation with the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

For all of us, cars provide a high degree of individual mobility, and this is something that we do not want to be required to give up in the future. However, increasingly scarce resources and growing strains on the environment make it necessary to use vehicles that can run on alternative forms of energy, such as electricity from renewable sources. The use of electrical energy in road traffic will require us to merge energy and transportation systems that to date have largely functioned separately from one another. This merging process can succeed only on the basis of modern information and communication technologies (ICT), especially when it comes to finding economically viable and user-friendly solutions.

Within the framework of a nation-wide technology competition, the Economics and Environment Ministries selected seven projects that by 2011 will develop important new ICT-based technologies and services to promote electric mobility. These projects focus on such key areas as systems integration (smart charging and vehicle-to-grid systems), vehicle navigation and driving assistance, fees and bill payment systems, vehicle fleets, and mobility services. Total investment amounting to roughly 100 million euros will be allocated to these projects, which will develop prototypes and economically viable solutions to be assessed for the very first time in comprehensive field tests. Thus the “ICT for Electric Mobility” programme forms a key pillar of the German government’s National Development Plan for electric mobility.

eE-Tour Allgäu

Blazing trails with electric power

ICT and electric mobility for environmental protection and tourism in the Allgäu region

Environmental protection and tourism promotion are not necessarily mutually exclusive priorities. The Allgäu region in southwestern Germany wants to prove that the two can go together. In Germany’s largest contiguous tourist area, it is important for both locals and guests to be able to get wherever they need to at any time. The result: today the environment bears the burden of increasing traffic, and this detracts from both the attractiveness of tourist destinations as well as the recreational value of the countryside.

The eE-Tour Allgäu project aims to use electric mobility to help solve the region’s needs for full mobility as well as the highest possible level of environmental protection. This will be done by creating a fleet of electric vehicles that can be rented by both locals and tourists. The eE-Tour project places a central priority on putting together a diverse fleet of vehicles and establishing a charging infrastructure that incorporates communication technology. The electricity for charging stations is derived entirely from renewable energy sources. The project is developing a new ICT-based concept for these charging stations, which will communicate with in-vehicle computers so that drivers can travel safely, silently and emission-free through the Allgäu.



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www.ee-tour.de



e-mobility

ICT-based integration of electric mobility into the networks of the future

An electric car without a power grid is like a fireplace without a fire. In order for electric mobility to achieve broad-based success, the entire system must be linked up intelligently to existing energy networks. To this end, the e-mobility project aims to develop an innovative smart-charging and billing infrastructure for electric passenger vehicles that can be integrated into the existing electricity grid. Project research focuses on the development of an open-interface communication system and a centralised information/billing system, the large-scale integration of all necessary components, and the formulation of appropriate business models for all actors along the value chain.

Through its close links with other initiatives such as the E-DeMa E-Energy model regions, the Smart City Mülheim test module, the test fleet in Berlin, and the EU’s planned Grid-for-vehicles (G4V) project, the e-mobility project aims to serve as the launching pad for the establishment of a comprehensive infrastructure and uniform standards in both Germany and the EU.



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Future Fleet

Green energy for company cars

Integrating electric vehicles into company car fleets

For the first time ever in Germany, two major companies – the software giant SAP AG and the energy group MVV Energie AG – plan to convert a portion of their company car fleets into electric vehicles. Within the framework of the Future Fleet project, about 100 electric cars will be charged exclusively with renewable electricity and used by both companies. To enhance the efficiency of vehicle deployment, the project will test a software prototype for the smart management of company car fleets. This software will make it possible to analyse the interrelationships between mobility needs, technical possibilities, and new requirements resulting from the use of electric vehicles. This analysis will take a wide variety of driving and vehicle parameters into account, including the distance and duration of planned drives as well as vehicle range.

The Future Fleet project also aims to gather new findings on key issues such as user acceptance, changes in transport habits, as well as barriers to and opportunities for the use of electric vehicles by companies. These issues will be studied on the basis of comprehensive field tests and statistical analyses carried out by the research partners involved in the project.



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