




## Smart grids to help optimizing the utilization of power grids

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The surge in the production of electricity from renewable sources increasingly leads to periods of oversupply, in particular during the daytime: When the sun shines, photovoltaic systems - and there are currently over 1 million panels installed in Germany - generate more electric power than can be absorbed in the regional grids. To enable a load balancing between regions, the capacity of wide-area grids needs to be increased significantly. At times, however, the demand just doesn't exist. On the other hand, in the early evening hours there may be a demand peak that is difficult to satisfy and may even overburden the grid. To reap the full potential of renewable, environment-friendly solar and wind power and to reduce investments in wide-area grids and transportation losses, we need to better balance supply and demand at the local or regional level. This holds in particular for the highly volatile solar power.  
In the GreenCom project, co-funded by the European Commission, a consortium from industry and research develops and evaluates a "Smart Energy Management System" for the local level. Private households and businesses are equipped with smart meters and additional networked sensors, e.g. for measuring temperatures. In near real-time, the system collects, aggregates and analyzes the energy consumption data as well as the renewable electricity generated in the neighborhood. On this basis the management system makes short-term (up to four hours) forecasts of local electricity supply and demand. The system is also connected to the major electricity-consuming devices in the households. Thus it can control the operation of heat pumps, refrigerators, washing machines or chargers for electric vehicles", explains Ms. Daniela Fisseler, GreenCom project manager at the Fraunhofer Institute for Applied Information Technology FIT. Currently the partners in the GreenCom project are building a testbed to evaluate a range of application scenarios and to collect data for the analysis of a number of business models. Initial pilot implementations are available and are being extended. In parallel, the project works with the local electricity company to install the system in the households on the Danish isle Fur. There they will test and evaluate the different concepts for local grid management under real-life conditions, involving about 40 normal consumers and consumers that also produce electricity.  
The GreenCom project is partially funded by the European Commission under the 7th Framework Programme (FP7 ICT-2011.6.1 Smart Energy Grids). The project consortium includes Instituto Superiore Mario Boella (coordinator), Sensing Control Systems (SCS), In-JeT ApS, Tyndall National Institute - University College Cork, Actua A/S, EnergiMidt A/S and Fraunhofer FIT. For more information see: [www.greencom-project.eu](http://www.greencom-project.eu)  
The GreenCom project will be presented in the CeBIT booth of Fraunhofer-Gesellschaft, Hall 9, E40, March 10 - 14, 2014.  
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