

Launch of the SEMIAH Project on Smart Energy Research



The outcome of a recently launched European research project, SEMIAH, has both financial and environmental benefits. The project has been granted € 3,763,688 from the European Union, and will result in lower electricity bills, and reductions in carbon dioxide emissions and fuel costs.

The European Commission supports research and development in a new, secure, and cost-effective *information and communication technology* (ICT) infrastructure to increase energy efficiency, and to facilitate the speedy progress toward EU's energy and climate objectives for 2020. The infrastructure is driven by the increasing uptake of *renewable energy sources*, and is targeting major drivers of *demand response* technology in Europe. In this context, demand response may be regarded as customer's changes in electric usage from their normal consumption patterns in response to changes in the price of electricity – or other incentive payments – over time.

The EU's Seventh Framework Programme (FP7) project: Scalable Energy Management Infrastructure for Aggregation of Households (SEMIAH) has been launched to form this innovative ICT infrastructure, while simultaneously supporting existing and opening new business opportunities for the European industry. The smart grid research underpinning the project is not only for Europe but for the entire world, enabling scientific communities to work together supporting individual collaborative initiatives in ways that up until now were unthinkable.

The consortium behind the SEMIAH project aims to pursue a major technological, scientific and commercial breakthrough by developing a novel ICT infrastructure for the implementation of demand response in households. The SEMIAH infrastructure enables the shifting of energy consumption from high energy-consuming loads to off-peak periods with high generation of electricity from renewable energy sources. The project's innovative approach is based on the development of an open framework that will promote an environment for the deployment of smart grid services for households. A centralised system for demand response service provisioning based on *aggregation, forecasting* and *scheduling* of electricity consumption will be developed. Furthermore, the project delivers a secure demand response solution for control of electrical loads in households at a competitive price, supported by new business models that provide incentives and benefits for players in the electricity market and residential customers.

International dimension

Europe stands at the global forefront of the technological development of renewable energy sources. Several member states are leading the way in the process of incorporating higher shares of sustainable energy in the energy production mix. This advancement challenges the stability of the electricity distribution grid in the balancing of supply and demand.

The SEMIAH consortium of twelve partners from four European countries, jointly possess the technological skills and competence needed to overcome the identified challenges and to drive this ambitious project to successful results. The partners have a diverse background in ICT, energy, and telecommunications. From ICT: Aarhus University (DK), Centre Suisse D'Electronique et de Microtechnique (CH), University of Agder (NO), and Haute Ecole Specialisee de Suisse Occidentale

(CH). From energy: Fraunhofer IWES (DE), Agder Energi Nett (NO), SEIC Teledis (CH), EnAlpin (CH), Misurio (CH), and Develco Products (DK). From telecommunications: Devoteam Solutions (NO) and netplus (CH).

Expected impact

The SEMIAH project holds significant positive impacts related to technology development, the electricity market (residential customers, energy utilities and grid operators), and the support of societal and political objectives for energy and climate in Europe. More concisely, these impacts count:

1. Reduction of the gap between energy produced and energy consumed.
2. Reduction and shifting of electricity peak loads.
3. Increase of renewable energy sources and combined heat and power stations connected to the distribution grid.
4. Positive impact on the end-users (customers and distribution grid operators) participating in the SEMIAH project.
5. Contribution to EU's societal and political goals on energy and climate.
6. Increasing the number of publications jointly authored by researchers from ICT and energy sectors.

Through lower electricity bills, improved integration of renewable energy sources, and higher stability of the electricity grid, the SEMIAH project will provide benefits to residential customers, energy utilities and the society in general. Hereby, the project will enable savings in carbon dioxide emissions and fuel costs and reduce investments in distribution grid expansions and electricity peak generation plants.

Project web site: <http://www.semiah.eu>

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Project at a Glance

Project acronym: SEMIAH

Project title: Scalable Energy Management Infrastructure for Aggregation of Households

Starting date: March 1, 2014

Duration in months: 36

Funding: €3,763,688.00

Funding scheme: Collaborative project

Call (part) identifier: FP7-ICT-2013-11

Work programme topic addressed: Challenge: 6: ICT for a low carbon economy, Objective: ICT-2013.6.1 Smart Energy Grids

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