



## Project Fact Sheet

Updated: September 2008

### Smart Domestic Appliances in Sustainable Energy Systems (Smart-A)

<b>Programme area:</b>	ALTENER "RES-Electricity"; and SAVE "Innovative approaches in industry"
<b>Status:</b>	Ongoing
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<b>Website:</b>	<a href="http://www.smart-a.org">http://www.smart-a.org</a>
<b>Objective:</b>	To identify synergies from coordinating energy demand of appliances with renewable energy generation and cogeneration
<b>Benefits:</b>	Improved integration of appliances into energy systems with high shares of renewable energy and cogeneration
<b>Keywords:</b>	Load management, demand side management, system optimisation
<b>Duration:</b>	01/2007 – 06/2009
<b>Budget:</b>	€ 1.351.202 (EU contribution: 50%)
<b>Contract number:</b>	EIE/06/185/SI2.447477



#### Short description

The Smart-A project assesses the overall potential for load-shifting by domestic appliances and compares this with requirements from sustainable energy generation both on the local level as well as in larger electricity systems. Based on this, the project will develop strategies how smart appliances can contribute to load management in sustainable energy systems, which include large shares of intermittent generation, e.g. from wind or solar energy.

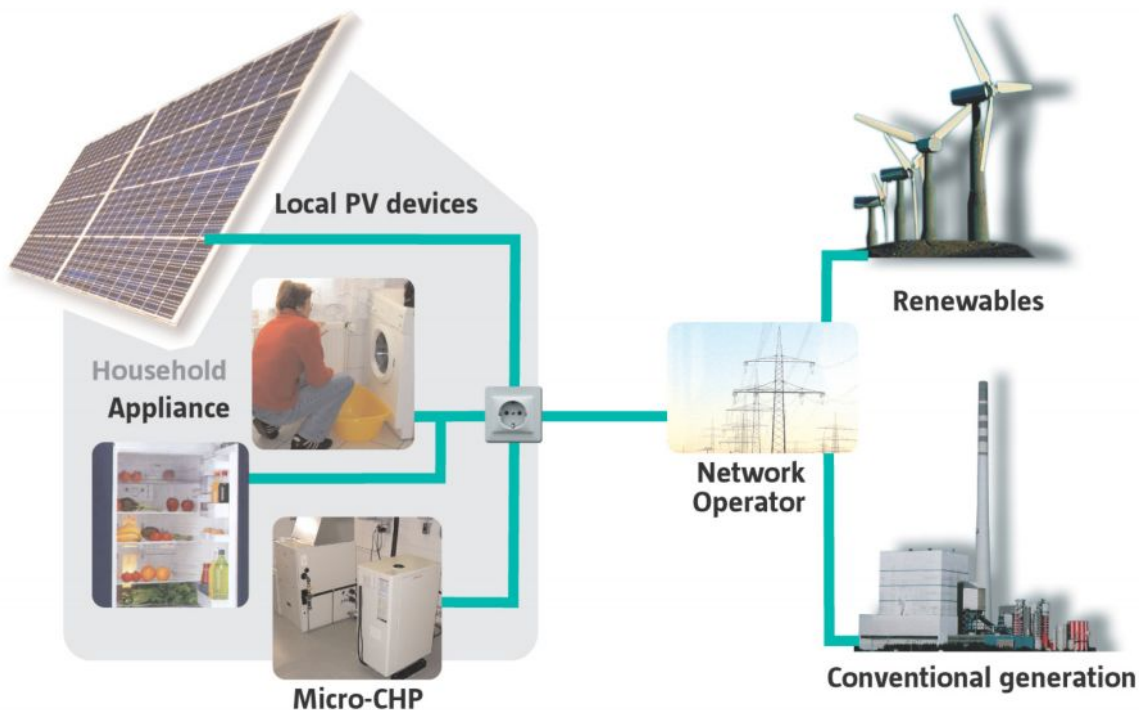
The technical aspects of the assessment include an analysis of potential changes to appliances operation, of characteristics of local energy generation (from renewables and/or cogeneration) and of load management requirements in the larger electricity networks. The project also features a detailed assessment of the acceptance of a smart appliances operation by users, and an evaluation of the usability of available control technologies and communication standards.

The project is conducted in cooperation with manufacturers of appliances and electric utilities. The findings from the analysis will be tested with experts in regional case studies in selected European countries.

## Expected and/or achieved results

- A thorough analysis of technological implications, user preferences, and the economic and ecological costs and benefits of an improved coordination of domestic appliances with energy supply.
- A clear understanding of how appliances should be designed to enable them for smart operation in the larger energy system.
- Guidelines how consumers can be motivated to participate in the Smart-A concept.
- An assessment of the potential implications of Smart Appliances on energy generation both at the local level as well as in the larger electricity system.
- Strategy recommendations for all relevant actors how Smart Appliances could be introduced.

### The Smart-A vision:



## Lessons learnt

Although the project has not been completed it is possible to draw the following preliminary conclusions:

- Many domestic appliances, such as refrigerators and freezers, washing machines, tumble driers and dishwashers offer a variety of options for load management. These can be activated automatically by energy managers (internal or external to the appliance) or manually by the consumer.
- In general consumers show a high acceptance towards Smart Appliances, if they offer financial benefits and do not require major changes to their daily routines and comfort is maintained or increased. However, many consumers prefer to keep full control over their appliances.
- The value of demand side load management to the electricity system depends on the flexibility of the generation system, the operating cost of marginal power plants and the existence of network constraints, which could be managed with the support of load management.

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