

1. Local energy resources in distributed energy systems

2. What is integrated with DSM

DG

Energy storage

Smart grid technologies

3. What is the level of commercialization

Research project

Demonstration

Field test

Existing practice

4. Where to find more information?

- Teemu Tommila, VTT

[teemu.tommila@vtt.fi](mailto:teemu.tommila@vtt.fi)

- [http://akseli.tekes.fi/opencms/opencms/OhjelmaPortaali/ohjelmat/DENSY/en/Closing\\_Seminar\\_2007.html](http://akseli.tekes.fi/opencms/opencms/OhjelmaPortaali/ohjelmat/DENSY/en/Closing_Seminar_2007.html) → Final Report

5. Objectives of the case

The aim of the project was to describe the area of distributed energy systems and identify the most important systems and implementation concepts related to them. The focus of the research was on systems less than 500 kW. New and emerging business models and implementation methods were utilized and taken as a starting point.

6. Business rationale/model

7. Technologies used

8. Short description of the case

The project primarily aims at defining functional concepts and IT architectures for optimising the use of local energy resources, including both real-time control and associated services. Analysis of existing and identification of future business processes is used as a basis for requirements elicitation. The working hypothesis is that affordable, intelligent and integrated control and information systems are needed to realise the market potential of small-scale energy generation and distribution.

9. Achieved/expected results (operational savings, CO<sub>2</sub>, efficiency enhancement)

The ambition has been to identify and lay the groundwork for industrial development projects in the field. These could most feasibly advance through pilot demonstrations of

small scale generation. At best, these would also show how a network of small specialised companies can operate an advanced system. Possible sites where distributed generation could be combined with research and monitoring activities should be mapped in order to enable monitoring the joint activities of free agents on the energy market. Such a mapping could also support a higher grade of automation in small-scale generation and would be necessary for the advancement of any Plug&Play-solution in grid connection.

#### 10. Lessons learnt