

1. Development environment for distributed generation. Research platform MULTIPOWER

2. What is integrated with DSM

- | | |
|-------------------------|-------------------------------------|
| DG | <input checked="" type="checkbox"/> |
| Energy storage | <input checked="" type="checkbox"/> |
| Smart grid technologies | <input checked="" type="checkbox"/> |

3. What is the level of commercialization

- | | |
|-------------------|-------------------------------------|
| Research project | <input checked="" type="checkbox"/> |
| Demonstration | <input type="checkbox"/> |
| Field test | <input type="checkbox"/> |
| Existing practice | <input type="checkbox"/> |

4. Where to find more information?

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http://akseli.tekes.fi/opencms/opencms/OhjelmaPortaali/ohjelmat/DENSY/en/Closing_Seminar_2007.html → Final Report

5. Objectives of the case

During the last years several different independent energy production and operational testing environment have been realised in different research projects at VTT. The target of this Multipower project was to integrate the existing separate testing systems to one complex DG testing environment so that in the future different technical solutions for distributed energy systems can be tested.

6. Business rationale/model

7. Technologies used

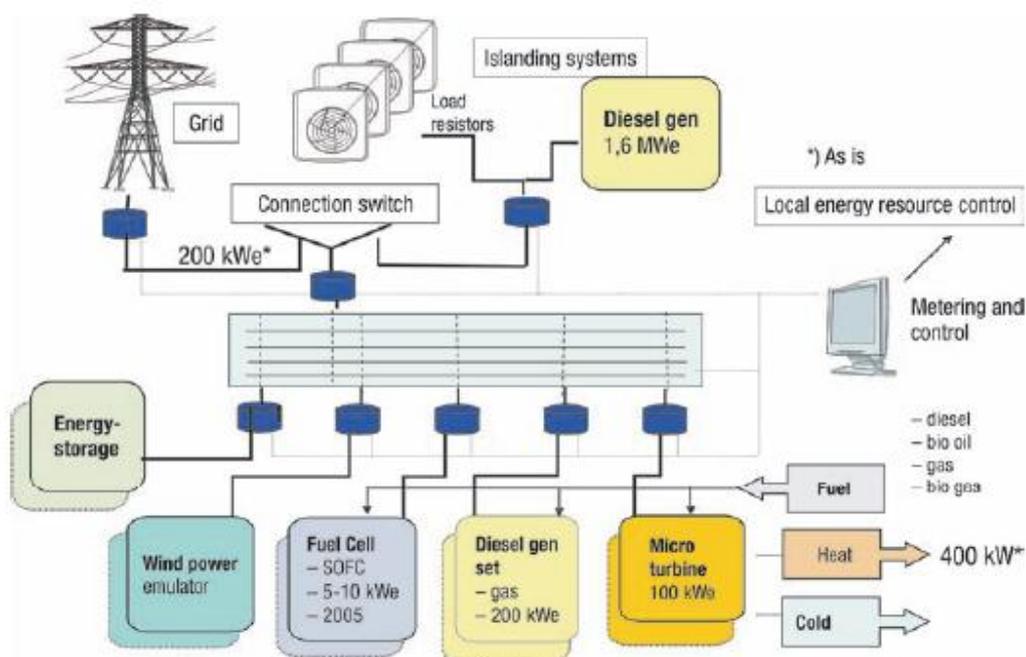
Environment today consists of diesel generator units (1.6 MVA, 60 kVA), microturbine (100 kVA), rotating and static loads, and optional wind power generator emulator (< 500 kVA), storage (30 kVar) and fuel cell power unit (5 kW).

8. Short description of the case

In Multipower project the existing separate testing systems were integrated for a complex DG testing environment so that in the future different technical solutions for distributed energy systems can be tested in a multioperational environment. In the environment, which was build in the project, different parallel testing circuits can be created for simultaneous tests. An extensive computer-based simulation environment was created by VTT and the University of Vaasa.

This environment can be applied in studies related to the analysis and design of grid interconnection of various types of distributed generation. The primary aim was to create a collection of simulation models representing various types of networks and generators. The network models serve as a basis for the simulation environment, and the user will have a free choice to include a desired selection of various distributed generators into the network model. In addition to these the aim was also a have library of models representing the protection relays and control systems. The primary tool applied in the projects was PSCAD, which is a well-known power system transient simulation tool.

In next picture is presented Multipower DG testing platform.



9. Achieved/expected results (operational savings, CO₂, efficiency enhancement)

10. Lessons learnt