

Introduction to the DERlab Network of Excellence

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DERlab Conference
"Six Years Cooperation in the Network of Excellence"
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Kassel



Content



- About the DERlab Network of Excellence
- Main results of the EC FP6 Network of Excellence
- Overview of the DERlab conference

The DERlab Network of Excellence



History

- In 2005, leading research institutes from 11 European countries started an extensive integration process in the framework of the "European Network of Excellence of DER Laboratories and Pre-Standardization".



- Kick off meeting December 2005, Kassel



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The DERlab Network of Excellence



Main Objectives

- Setup of a distributed, independent world-class DER laboratory for Europe
 - Support for the development of European and international standards
 - Achievement of a durable networking between European laboratories
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- European Project “Network of Excellence” in the frame of the FP6 programme
 - Duration: November 2005 – October 2011



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DERlab Network of Excellence in 2005



Initial members of the Network of Excellence



ICCS-NTUA



The University of Manchester



arsenal research
An Enterprise of the Austrian Research Centers.



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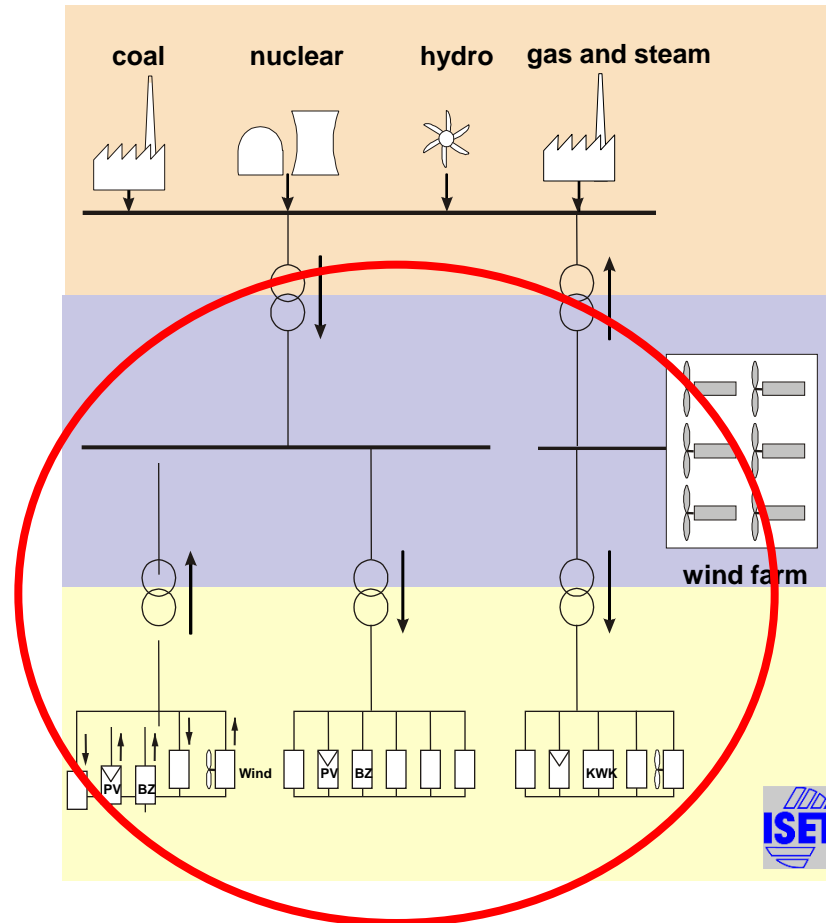


Change of Energy Supply Structures

In the future increased importance of

- DER & RES
- bi-directional power flow in the distribution grid
- load management
- bi-directional communication

-> new standardisation requirements



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Why are laboratory activities important ?



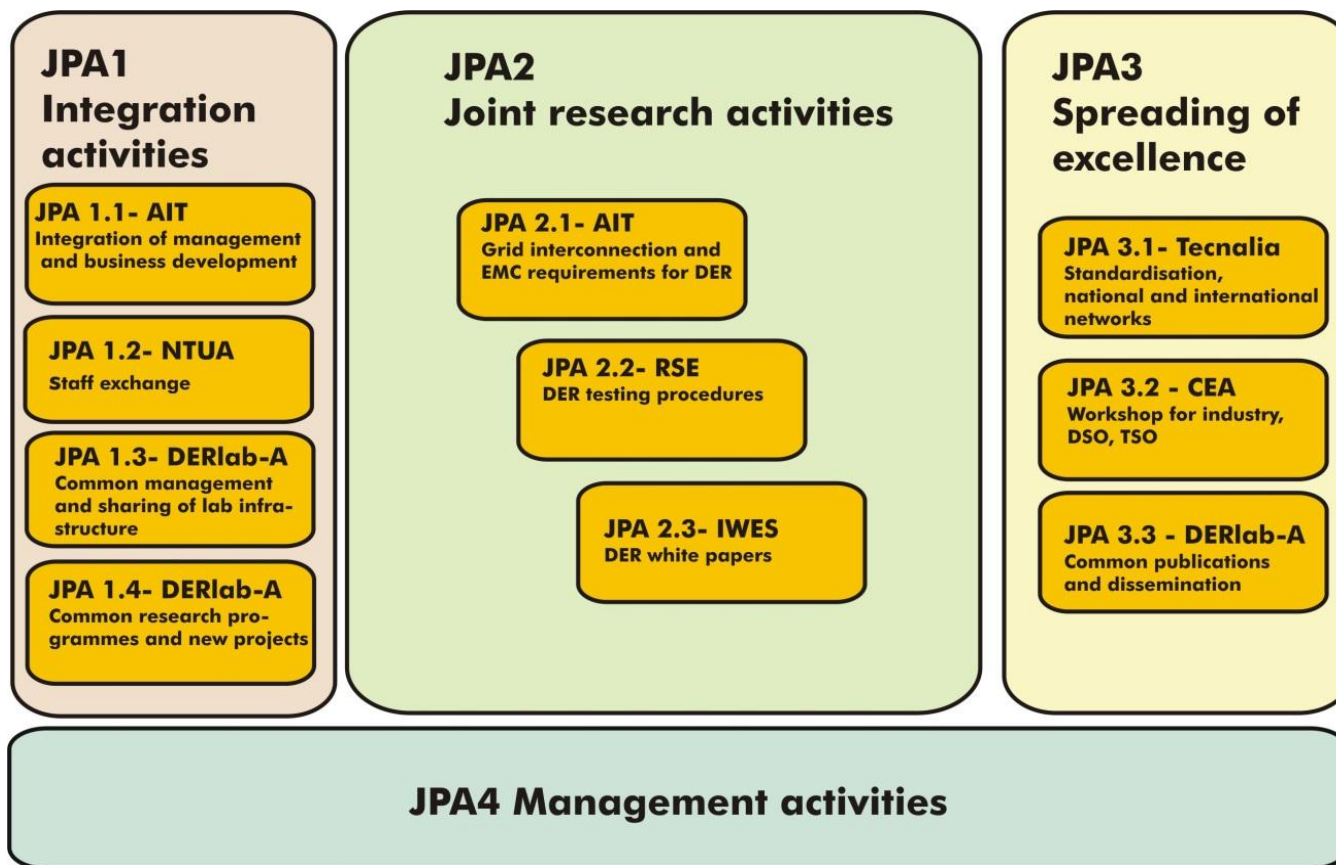
- (1) Find system solutions for the European electricity grid with high shares of RE and DER:
 - how to efficiently adapt/change the power supply system
 - how to control the distributed generation
- (2) Develop, improve and test (in the system environment!)
 - Distributed generators
 - Energy storage units
 - Other grid equipment (transformers, safety equipment etc.)
- (3) Define appropriate behaviour of DER units in the system context
- (4) Pre-standardisation work for testing single devices & grid control systems that support safe, reliable and efficient operation of the power system

Task for the Laboratories: Laboratories provide the research and test infrastructure. Simulation alone is not sufficient !

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DERlab NoE: Joint Programme of Activities



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DERlab Main results: Integration



The overall objective of the NoE:

- to establish a durable long lasting cooperation and integration between the European laboratories working in the area of distributed energy resources.

-> Foundation of the European Distributed Energy Laboratories (DERlab e.V.) in 2008



The Association of European Distributed Energy Resources Laboratories **DERlab**

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Press Release

Harmonised Standards for Solar Power Plants and Wind Turbines

Leading European Research Institutes Found the Association DERlab to Strengthen the Distributed Power Generation

Kassel, 17 September 2008. Today in Kassel, Germany, eleven leading European research institutes have founded the association DERlab (which stands for European Distributed Energy Resources Laboratories) as an independent world-class laboratory for the grid-integration of distributed power generation. The association is based at the Institute for Solar Energy Supply Technology (ISET) in Kassel.

Currently distributed power generators such as solar power plants and wind turbines feed their electricity – unregulated for the most part – into the public grid at a low-voltage or medium-voltage level. Their increasing numbers create new challenges, in particular since currently there are neither harmonised standards nor harmonised interconnection requirements or test procedures for grid feed-in in Europe.

In the Network of Excellence DERlab, supported by the European Commission, the research institutes from eleven countries have been developing joint requirements and quality criteria for the interconnection and operation of distributed energy resources since the end of 2005. In addition, they prepare testing and certification methods as well as standards valid all over Europe for decentralised power generation. By founding the association, the project partners have now sealed their further co-operation after the six-year research project is completed; even after 2011 they will continue to jointly use the laboratory infrastructure and exchange research results, personnel and know-how. "With our collaboration, we want to ensure the quality of decentralised power generators and co-ordinate future test procedures at an early stage", Philipp Strauß, chairman of the board of the new association, said during the first meeting of members on the verge of the 13th Kassel Symposium Energy Systems Technology on September 17th in Kassel.

International White Book on Grid Inverters

Counted among the results of the Network of Excellence is, for example, the preparation of an international white book for research and standardisation needs of grid inverters. These devices are increasingly being used for the integration of distributed power generation and adapt the voltage and frequency of a solar power plant, for example, to grid conditions. To date, international standards do not exist in this area. This is what the DERlab researchers want to change. Their draft concept will be discussed at an international level within the framework of the third DERlab inverter workshop in Nice, France on 9 December 2008.

Members of the board: Philipp Strauß (Spokesperson), Hubert Fechner, Maria-Luciana Rizzi



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DERlab NoE Main results: Joint Research



- Several joint European research activities have been performed.
- Research work was accompanied by public Workshops
- Results will be made public available as “DERlab technical reports” by End of October 2011:
 - International White Book on the Grid Connection of Static Converters
 - European White Book on Grid-Connected Storage
 - Testing of Power System Services of DER
 - Electromagnetic Compatibility for Distributed Energy Resources (EMC for DER)
 - Hardware in the Loop Testing of DER components
 - Network protection issues in the face of increased penetration of DER



DERlab Main results: Spreading of Excellence, National and International Networking



DERlab has established links to many players in the field of DER.
Examples:

- Technical liaison with the European Standardisation organisation CENELEC TC8X
- Involvement of DERlab in the Smart Grid International Research Facility Network (SIRFN)
- DERlab specialist workshops
- DER training courses
- Young researcher and PhD seminars
- National and regional networks



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DERlab Conference Programme

DERlab European Research

9:10 Welcome and Introduction to DERlab Network of Excellence

Patrick van Hove, European Commission
Philipp Strauß, Thomas Degner, IWES

9:30 White Book on Grid-connected Storage

Elisabeth Lemaire, CEA INES

9:50 Network Protection Issues Facing High Penetration of Distributed Energy Resources (DER)

Graeme Burt, The University of Strathclyde

10:10 Static Converters in Grids and Testing of Power System Services of DER

Per Noorgard, Risø DTU

10:30 Hardware in the Loop Testing of DER Components

Erik de Jong, KEMA

Break

DERlab Services

11:10 PV Module Outdoor Performance Testing

Nikos Hatziargyriou, ICCS/NTUA
Diana Craciun, DERlab e.V.

11:25 DER Inverter Testing

Dominik Geibel, Fraunhofer IWES
Omar Perego, RSE

11:40 DER Training Courses and PhD Seminars

Joseph Mutale, The University of Manchester

12:00 Presentation DERlab association

Roland Bründlinger, DERlab e.V.

12:15 Closing



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