

EERA Joint Programme Smart Grids

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Number participants and associates:	20 full participants, 16 associate participants, from 17 European countries, around 144 person years committed

Why a Joint Programme on Smart Grids?

The term Smart Grids refers to the progressive evolution of the electricity network towards “a network that can intelligently integrate the actions of all users connected to it – generators, consumers and those that do both, in order to efficiently deliver sustainable, economic and secure electricity supply”. The focus of the development and deployment of Smart Grids initiatives in European countries are linked with the main commitment to achieve the goals contained in the Climate and Energy Package 20-20-20. Priorities are also linked with the three main pillars of the European energy policy that the European Commission has indicated in its Green Book: Competitiveness, Security of supply and Sustainability.

JP Smart Grids – objectives

The present JP, by means of an extended cross-disciplinary cooperation involving many Research and Development (R&D) participants with different and complementary expertise and facilities, aims at addressing, in a medium to long term research perspective, one of the most critical areas directly relating to the effective acceleration of smart grid deployment: smart grids technology, its application and integration.

On the following webpage you will find more information about our JPs Sub-programme.

Visit the webpage:

www.eera-set.eu

Joint Programme on Smart Grids Sub-programmes

Sub-programme 1: Network Operation *coordinated by Klaas Visscher, TNO (NL)*

Main objective of the sub-programme is to contribute to the development of new control methods and technical solutions in electrical grid operation in order to improve the grid stability in presence of high penetration of Distributed Energy Resources (DER) and controllable loads. The long-term aim is to develop a generic "Primary" Smart Grid Control structure.

Sub-programme 2: Power System Management *coordinated by Henrik Bindner, DTU (DK)*

Focus of the sub-programme is on the optimization of the management of the distribution network in presence of DER and load control in an energy and market perspective. Technical and economic scenarios will be considered for the active distribution network development, taking into account the most important smart grids features.

Sub-programme 3: Control System Interoperability *coordinated by Chris Caerts, VITO (BE)*

Main objective of the sub-programme is to contribute to the development and evaluation of interoperable control systems enabling large scale DER integration. Interoperability will be considered at different levels: from grid and device level interactions up to business and e-Market level interactions. Topics covered range from the physical encoding and transmission of the data (ICT aspects) over Energy Management Gateway architectures to security aspects.

Sub-programme 4: Electrical Storage Integration *coordinated by Seppo Hanninen, VTT Ltd (FI)*

The overall objective of the sub-programme is to enhance the integration and control of storages in smart grid applications, the techno-economics evaluation of storages and integration of electric vehicles into the grid. The research will be conducted on the role of storage systems in order to create flexible control functions for vertical and horizontal integrated controls of the network under normal and disturbed conditions. In addition, the potential impact on networks and opportunities in current and future energy markets (e.g. offering ancillary services, reserves, peak shaving or balancing services) will be analysed.

Sub-programme 5: Transmission Networks *coordinated by Knut Samdal, SINTEF (NO)*

The main objective of this sub-programme is to contribute to the development of tools and methods for planning and operation of transmission networks which are needed to achieve a high share of renewable energy sources in the supply mix while maintaining an acceptable security of supply level in the system. Smart transmission technologies and new components to be operated to ensure stability and security in future power systems are also covered by this sub-programme.