Brussels, 18th May 2010

European Union backs research for the integration of wind power energy in the grid

The European Union, in its support for the integration of renewable energies in the European high-voltage grid, especially that of wind power origin, has launched the Twenties([1]) Project. The aim of this pioneering initiative is to significantly develop the testing and implementing of new technologies in order to increase a safe wind power generation within the European electricity system. Gathering 26 partners (TSOs, electrical companies, institutions) from 10 different member states, the Twenties project will last 3 years and has a total budget of 60 million euros, of which 32 million will be financed by the European Union.

The Twenties project becomes the most ambitious project presented to the DG-ENER of the European Union Commission within the Research, Development and Demonstration Framework programme. It contributes in a definite way to the EU objective for 2020 regarding energy resources – a 20% reduction in CO2 emissions; a 20% improvement in energy efficiency, and a 20% share of consumption from renewable energy sources.

This project will drive the implementation of these technologies that have passed the R&D stage, and give impulse to research for significant progress in the technologies that still have to pass it, to meet security operational requirements of the interconnected power system.

Red Eléctrica de España, Transmission System Operator (TSO) of the Spanish electricity system, is the consortium leader of this initiative which brings together 26 partners, companies and institutions of world reference in the electricity sector.

The group will contribute to identify and remove, by means of six demonstrations, the barriers to a broader incorporation of wind power energy (both onshore and offshore) into the electricity system, and increase the support to the system that can be provided by this type of generation. The full scale demonstrations, coupled when needed by laboratory demonstrations, aim at proving the benefits of new technologies, the majority coupled with innovative system management approaches.

[1]) TWENTIES = Transmission system operation with large penetration of Wind and other renewable Electricity sources in Networks by means of innovative Tools and Integrated Energy Solutions

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Objectives of a pioneering project

Spanish utilities and electrical industry, which holds a privileged position in the management of onshore renewable energies, will set an ambitious demonstration under Iberdrola Renovables rule. More than 200 turbines with a total power of 500 MW will contribute to ancillary services by featuring voltage and frequency control at different levels. These actions will be coordinated jointly by the control rooms of Iberdrola (CORE) and Red Eléctrica de España (CECRE), world firsts of their kind.

Also outlined within the objective of checking the contribution of this type of intermittent generation into the system, the Danish utility DONG Energy will demonstrate how combining manageable demand with wind power production within a favourable regulatory framework, contributes to increase the security and efficiency of the electricity system.

The works to achieve increased flexibility in the electrical energy transmission networks will be carried out by two TSO: the Belgian TSO, ELIA, in coordination with CORESO (the regional coordination service centre), through a demonstration of sensors and control devices which contribute to control possible large scale instabilities induced by the wind farms in the region; and the Spanish TSO, Red Eléctrica de España, with the application of alternative operation parameters which improve security and new power flow control devices which optimize the capacity of the grid in order to evacuate the largest quantity of wind power production.

The challenges associated to offshore wind farms will be addressed from an economic and technical viewpoint. The French TSO, RTE, will analyze the economic and technical feasibility of HVDC networks and demonstrate the feasibility of critical protection and control components required to develop HVDC networks and make them operate securely when interconnected to the AC mainland grid.

The Danish TSO, Energinet, will check if through adequate coordination between offshore wind farms and hydroelectric generation, located in this case in Norway, it is possible to avoid the generation loses that occur during extreme meteorological phenomena.

The experimental results of Twenties will assess, at a European level, the potential impact of the progressive application of the solutions tested and identified as necessary for the transmission grid of the European electricity system in the 2020 horizon. This approach will also serve the objectives of the European Strategic Energy Technology Plan.

Entities participating in the Twenties Project

26 partners from ten different Member States and one Associated Country.

Red Eléctrica de España S.A.U. (Spain)	Dong Energy Power A/S (Denmark)	Iberdrola Renovables S.A. (Spain)
RTE (France)	Elia System Operator S.A. (Belgium)	ENERGINET.dk (Denmark)
Risø DTU (Denmark)	Electricité de France, S.A. (France)	Areva T&D (United Kingdom)
Tennet TSO B.V. (Nederlands)	Univers. Pontificia de Comillas (Spain)	Fraunhofer IWES (Germany)
SINTEF Energy Research A/S (Norway)	Gamesa Innovation & Techn. (Spain)	SIEMENS Wind Power A/S (Germany)
50Hertz Transmission (Germany)	EWEA, European Wind Ass. (Belgium)	CORESO SA (Belgium)
ABB Asea Brown Boveri, S.A. (Spain)	INESC-PORTO (Portugal)	University College Dublin (Ireland)
ENEA-Ricerca sul Sist. Elettrico (Italy)	University of Strathclyde (United Kingdom)	University Liege (Belgium)
Katholieke Universiteit Leuven (Belgium)	Université Libre de Bruxelles (Belgium)	