



Wind generation in weak systems

By

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Abstract

Weak systems are characterized by low short circuit ratio and/or low inertia. Wind generation face problems of different nature when connecting to weak systems. The question from the view point of a wind generator manufacturer is to squeeze the generator controls to maximize wind generation in a given point of connection. Several phenomena and issues will be discussed: subsynchronous resonance, harmonic amplification, voltage stability and controller interaction.

This contribution will describe methods and tools developed in research projects for wind generation equipment manufacturers.

Short biography of Prof. Luis Rouco Rodríguez



Luis Rouco Rodríguez obtained the titles of Industrial Engineer and Doctor Industrial Engineer for the Technical University of Madrid in 1985 and 1990 respectively. He is a Professor of the Technical School of Engineering (ICAI) of the University Pontificia Comillas of Madrid. He has been The Director of the Department of Electrotechnics and Systems in the period 1999-2005. It teaches courses of Electrical Machines in the studies of Industrial Engineer and of Advanced Analysis of Systems of Electric power and of System stability of Electric power in the Program of Postdegree in Electric power School.

He has been The Director of the Specialist's Course in Operation of the Electrical System REE-ICAI in the period 2004-2007 and of the Master in Electrical Technology ENDESA-ICAI in the period 2007-2011. Prof. Rouco Rodríguez develops his activities of research in the Institute of Technological Research (IIT) where it has supervised numerous projects of research and consultancy for the public Spanish administrations (Department of Education, Department of Promotion, GIF, etc.), the principal electrical Spanish companies like Endesa, Iberdrola, Natural Gas, Electrical Network of Spain, Union Fenosa and Viesgo and other industrial companies as ABB, Iberian AEG of Electricity, Ardanuy Ingeniería, Babcock and Wilcox Española, Hard Felguera, Eliop, Grouped Businessmen, Indra, Initec Energía, To hoist, SEMI, Sener and Assembled

Technologies. Also it has developed projects for companies and foreign institutions as Alstom (Switzerland), University of La Plata and CAMMESA (Argentina), RTE-France and INESC - I Carry (Portugal). The areas of work of the Prof. Rouco Rodríguez are the shaped one, analysis, simulation and control of the systems of electric power.

Prof. Rouco Rodríguez has published great number of articles in conferences and national and foreign magazines. Prof. Rouco Rodríguez is member of the IEEE and of CIGRÉ, President of the Spanish Chapter of the Power and Energy Society of the IEEE and member of the Executive Committee of the National Committee of CIGRÉ's Spain. He has been an investigative visitor in Ontario Hydro (Toronto, Canada), MIT (Cambridge, Massachusetts, The United States) and ABB Power Systems (Vasteras, Sweden).