

## Department of Electrical and Computer Engineering

Title: «***System Frequency Response Considering the Integration of Wind Power***»

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**Wednesday, 17<sup>th</sup> April 2013, 17:00 – 18:30**  
**Room KENTP – A008, Old Campus**  
**University of Cyprus**

**Abstract:** The frequency of a power system depends on real power balance: generation-demand. During the normal operation of a power system, the frequency is regulated within strict limits by adjusting the electrical supply to meet the demand. If the balance between generation and demand is not reached, the system frequency will change at a rate initially determinate by the total system inertia. The total system inertia comprises the combined inertia of most of spinning generation and load connected to the power system. The contribution of the system inertia of one load or generator depend if the system frequency causes change in its rotational speed and, then, its kinetic energy. Worldwide, electricity generation from renewable energy is increasing rapidly; it is especially true in terms of the increasing of the wind power penetration. This situation arise some issues regarding the system frequency control because wind turbines provide small or even none response to frequency changes. Power electronically controlled and/or power electronically connected generators such as DFIG and FPC wind turbines do not naturally provide inertia response. However inertia response can be emulated by adding a supplementary control signal proportional to the rate of change of frequency, this is named the Synthetic or Artificial Inertia. This approach imposes some challenges about control and protection systems. This workshop is designed to provide a general understanding of the system frequency response in power system considering the integration of wind power.

**Biography:** **Francisco M. Gonzalez-Longatt** is currently a Lecturer in Electrical Engineering in the Faculty of Engineering and Computing, University of Coventry and he is Vice-President of Venezuelan Wind Energy Association. His academic qualifications include first Class Electrical Engineering of Instituto Universitario Politécnico de la Fuerza Armada Nacional, Venezuela (1994), Master of Business Administration (Honors) of Universidad Bicentenario de Aragua, Venezuela (1999) and PhD in Electrical Power Engineering from the Universidad Central de Venezuela (2008). He is former associate professor on Electrical engineering Department of Universidad Nacional Politécnico de la Fuerza Armada Nacional, Venezuela (1995-2009). He was formerly with the School of Electrical and Electronic Engineering, The University of Manchester as Postdoctoral Research Associate (2009-2011). His main area of interest is integration of intermittent renewable energy resources into future power system and smart grids.

# SEMINAR: System Frequency Response considering Integration of Wind Power



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