

## **Role of Robust Control and State Estimation in Future Electricity Networks**

**Prof. Bikash Pal (Imperial College, London)**

May 20, 2011

Electrical transmission and distribution all over the world is entering a period of significant renewal and technological change. Transmission grids such as the Nordic system, the National Grid in the UK, UCTE system in continental Europe and North American grid are accepting power injections from new and variable energy sources, especially from large scale wind power generators, and will therefore face major future challenges to operate and control. Policy documents from the US DOE, EU and UCTE, and the National Grid, UK have highlighted (i) the need for improved grid infrastructure and advanced control technologies and (ii) the importance of emerging measurement-based technology in enhancing the stability and security of AC transmission in an increasingly complex operating environment (iii) making distribution network more active in responding to complex demand from transport and district heating. The talk will present research activities on robust power transmission control and state estimation in distribution network and their importance in responding to some of the operational challenges that future electricity network will inevitably face. Solution to some specific problems of wide area control over communication network and placement of meters and pseudo measurement model for state estimations will be discussed.

Bio:

Dr Pal's research over the last 10 years has focussed on designing robust control techniques to guard against power system stability problem. He has led research in power transmission control and state estimation at Imperial College London, primarily funded by research council and power industries. Dr Pal is a great ambassador of advanced multivariable control solutions to power system problems. He offered tutorials, keynote speeches and DLP lectures in many IEEE Regions. He serves as Editor-in-Chief of the IET Generation, Transmission and Distribution journal. He has been honoured by the German Research Foundation (DFG) with Mercator Professorship in 2010.