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Automatic  
Control and  
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The Department of Automatic Control & Systems Engineering  
is pleased to announce the following seminar:

## **New Approaches for the Control of HV and LV Distribution Networks**

**Dr Luis Ochoa**

*School of Electrical and Electronic Engineering  
The University of Manchester*

**Wednesday, 5<sup>th</sup> March 2014 at 14:00**  
LT02, Sir Henry Stephenson Building

### **Abstract**

The increasing and future adoption of small-to-medium scale low carbon technologies such as wind power, photovoltaic systems, electric vehicles and electric heat pumps is and will pose significant technical and economic challenges on distribution networks. High (6.6kV to 33kV) and low voltage (400V) distribution networks have been designed to have no (LV) or limited (HV) controlability and hence are largely unmonitored. However, it is likely that they will become one of the first bottlenecks towards the decarbonisation of our power systems

This presentation will first introduce the potential problems or impacts of different penetrations of low carbon technologies on LV networks using a Monte Carlo approach to cater for the corresponding uncertainties involved. It will then present and discuss the benefits and drawbacks of some of the potential solutions that might allow higher penetrations without the need of traditional reinforcements. Potential control solutions of HV networks and corresponding aspects will also be presented. Finally it will address the larger picture of the integration of LV-HV control schemes. The work is based on different industrial projects hence it will provide insights on real HV and LV networks as well as the trialed technologies

### **Biography**

Dr Luis Ochoa is a Lecturer in Smart Distribution Networks, and part of the Electrical Energy and Power Systems Group in the School of Electrical and Electronic Engineering at The University of Manchester. From 2007 to 2010 he was a Research Fellow in Energy Systems with the Institute for Energy Systems in the School of Engineering at The University of Edinburgh. He is an IEEE Senior Member since 2012.

In 2012 Dr Ochoa also undertook an industrial secondment with the Edinburgh based company Psymetrix Ltd. He holds a Bachelors degree in Mechanical and Electrical Engineering gained at UNI (Peru), and a Research MSc and PhD in Electrical Power Engineering, both gained at UNESP Ilha Solteira (Brazil). He has more than 80 research papers in peer-reviewed top ranked journals and top class international conference. He is also co-inventor of one patent filed by Psymetrix Ltd.

*Refreshments will be available following the talk in the  
Foyer of the Sir Henry Stephenson Building*