

## Programa de Doctorado Interuniversitario en “Sistemas de Energía Eléctrica”



Convenio de colaboración entre las universidades de Sevilla, País Vasco, Málaga y Politécnica de Cataluña para llevar a cabo, conjuntamente, la organización y desarrollo de las enseñanzas de doctorado en “Sistemas de Energía Eléctrica”  
<https://institucional.us.es/doctoradosee/>

## Máster Universitario en “Sistemas de Energía Eléctrica”



<http://departamento.us.es/ielectrica/master-see/>



### Ciclo de Conferencias

Dr. Pierluigi Mancarella

**Running a net-zero grid in  
2025: experiences from the  
Australian “real-world lab”**

Departamento de Ingeniería Eléctrica  
Escuela Técnica Superior de Ingeniería  
Camino de los Descubrimientos s/n  
41092 Sevilla (España)  
<http://departamento.us.es/ielectrica>

### SEMINARIO

**RUNNING A NET-  
ZERO GRID IN 2025:  
EXPERIENCES FROM  
THE AUSTRALIAN  
“REAL-WORLD LAB”**

### **ORGANIZAN:**

Cátedra Endesa  
de la Universidad de Sevilla

**Día: 9 de junio de 2025**

**Hora: 12:00 h.**

**Sala de Grados de la  
ETS de Ingeniería**

# Title: Running a net-zero grid in 2025: experiences from the Australian “real-world lab”.



**Dr. Pierluigi Mancarella**

***The University of Melbourne  
(Australia)***

## Abstract:

With deeper and deeper penetration of variable renewable energy sources (RES) and distributed energy resources (DER) across the world, new challenges are emerging in terms of their grid and market integration. In this lecture we will illustrate these challenges from a techno-economic perspective, with focus on security, reliability and resilience requirements when operating power systems and markets with ultra-deep penetration of RES and DER, and with the support of real experiences from Australia, and particularly South Australia, which has already exhibited net-zero grid operation in the past couple of years. We will then discuss several technical, commercial and regulatory solutions and opportunities that are being deployed or considered, ranging from widespread adoption of both highly distributed and large-scale batteries to the development of “clean super-power” plans based on green hydrogen investment.

## Bio:

**Pierluigi Mancarella** is the Chair Professor of Electrical Power Systems at the University of Melbourne, Australia, and Professor of Smart Energy Systems at the University of Manchester, UK. His key research interests include techno-economic modelling and analysis of multi-energy systems, grid integration of renewables and distributed energy resources, energy infrastructure planning under uncertainty, and security, reliability, and resilience of low-carbon networks.

Pierluigi is the Energy Systems Program Leader at the Melbourne Energy Institute, a Fellow of the IEEE (Institute of Electrical and Electronics Engineers), an IEEE Power and Energy Society Distinguished Lecturer, the Convenor of the CIGRE (International Council of Large Electric Systems) C6/C2.34 Working Group on “Flexibility Provision from Distributed Energy Resources”, holds the 2017 veski innovation fellowship for his work on urban-scale virtual power plants, and is a recipient of the international Newton Prize 2018 for his work on power system resilience in Chile. He is author of several books and over 300 research papers and reports, and is a Senior Editor of the IEEE Transactions on Power Systems, and the Oxford Open Energy journal.