

SPEAKERS

Dr. Pedro Rodríguez Cortés. SEER, Universitat Politècnica de Catalunya – UPC, Spain

Dr. Rodríguez received the Ph.D. degree in electrical engineering from the Universitat Politècnica de Catalunya (UPC), Barcelona (Spain) in 2004. In 1990, he joined the UPC where he became an Associate Professor in 1993. He was a Researcher in the Center for Power Electronics Systems, Virginia Polytechnic Institute and State University, Blacksburg, and in the Institute of Energy Technology, Aalborg University, Aalborg, Denmark, in 2005 and 2006, respectively. Currently he is the Head of the Research Center on Renewable Electrical Energy Systems at the UPC. His research interests include the integration of distributed energy systems, power conditioning, and the control of power converters. In these fields Dr. Rodríguez has coauthored about 100 papers in technical journals and conferences and he is the holder of five patents.

Dr. Mariusz Malinowski. Warsaw University of Technology, Poland

Dr. Malinowski received the Ph.D. degree in electrical engineering from the Institute of Control and Industrial Electronics, Warsaw University of Technology (WUT), Warsaw (Poland), in 2001. He is currently with the Institute of Control and Industrial Electronics, WUT. During his career he has been a Visiting Professor in several prestigious Universities in Europe and in the USA. He is an author of four patents, over 100 technical papers and co-author of chapters in two books. His current research activities include control of grid connected PWM converters, renewable energy, multilevel converters, HVDC technique, modulation and DSP applications. Mariusz Malinowski is associate editor of the IEEE Transaction on Industrial Electronics and editor in chief of IEEE Industrial Electronics Magazine.

Prof. Dr. Enric Fossas. ACES, Universitat Politècnica de Catalunya - UPC - Spain

Prof. Dr. Fossas graduated in Mathematics in 1981 and received the Ph.D. degree in Mathematics in 1986, both from the Universitat de Barcelona, (Spain). In 1986 he joined the Department of Applied Mathematics, Universitat Politècnica de Catalunya. In 1999 he moved to the Institute of Industrial and Control Engineering and to the Department of Automatic Control both from the Universitat Politècnica de Catalunya, where he is presently a full professor. His research interests includes nonlinear control (theory and applications), particularly variable structure systems, with applications to power electronics.

Dr. Pierluigi Siano. Università degli Studi di Salerno, Italy

Dr. Siano received the Ph.D. degree in Information and Electrical Engineering from the University of Salerno, Salerno (Italy), where he is currently an Assistant Professor in the Department of Industrial Engineering. Dr. Siano is Associate Editor of the IEEE Transactions on Industrial Informatics and member of the editorial board of several international journals. His research activities are centered on the integration of renewable distributed generation into electricity networks and Smart Grids as well as on the application of soft computing methodologies for analyzing and planning of power systems. In these fields, he has published more than 80 technical papers including more than 30 international journal papers.

Prof. Dr. Frede Blaabjerg. Aalborg University – AAU, Denmark

Prof. Dr. Blaabjerg received the PhD in Electrical Engineering from the Aalborg University (Denmark). In 1992 he joined the Aalborg University, where he is currently full professor in power electronics and drives since 1998. In the period of 2006-2010 he has been dean of the faculties of Engineering, Science and Medicine at Aalborg University, Denmark. His research areas are power electronics, static power converters, ac drives, switched reluctance drives, modeling, characterization of power semiconductor devices and simulation, power quality, wind turbines, custom power systems and green power inverter. Dr. Blaabjerg became IEEE Fellow in 2003 and from 2006 he has been Editor in Chief of the IEEE Transactions on Power Electronics as well as he has been Distinguished lecturer for the IEEE Power Electronics Society from 2005 to 2008 and for of IEEE Industry Applications Society since 2010. In 2002 he received the C.Y. O'Connor fellowship from Perth, Australia, in 2003 the Statoil-prize for his contributions in Power Electronics and in 2004 the Grundfos Prize in acknowledgement of his international scientific research in power electronics. He received the IEEE Power Electronics Society Distinguished Service Award in 2009 and the EPE-PEMC Council award in 2010.

Dr. Ion Etxebarria. IKERLAN, Basque Country

Dr. Etxebarria received his Ph.D. degree from the National Polytechnic Institute of Grenoble, (France) in 2003. In 2005 he joined the IKERLAN Technological Research Center (Spain), as a researcher and since 2008, he is the Manager of the Power Electronics and Control Engineering Department, a team of 35 researchers specialized in power electronics, energy storage systems and electrical machines, in the range of few kW to several MWs. He has more than 10 years of experience in industrial research projects, both as a researcher and as a project manager, in the field of Railway Traction System, Renewable and Power System applications for companies like CAF, ACCIONA, ALSTOM WIND or ORMAZABAL.

VENUE. The workshop will be held in the facilities of the ESCOLA TÈCNICA SUPERIOR D'ENGINYERS INDUSTRIAL I AERONÀUTICA DE TERRASSA (ETSEIAT) DE LA UNIVERSITAT POLITÈCNICA DE CATALUNYA
Address: Campus de Terrassa, Edifici TR5.
C. Colom, 11. 08222 Terrassa – Barcelona

LANGUAGES. All presentations will be in English.

REGISTRATION. The workshop is free of charge but registration is required.
Registration Officer:
Lidia Herrera lidia.herrera@upc.edu.
+34 93.739.85.49

CERTIFICATE AND ECTS. Participants attending all sessions will receive a Certificate. Certificate of attendance and an academic work could be accounted with 2 ECTS for the students of UPC - Energy Engineering Master or 1 ECTS for the Certificate of attendance.



Renewable Electrical Energy Systems Workshop 2011

December 14th to 16th, 2011
Terrassa-Barcelona, Spain

14th Wednesday		15th Thursday		16th Friday	
09.00 - 10.00h	Trends in Large Wind and PV Power Plants - Research and Technology Dr. Pedro Rodríguez Cortés. SEER, Universitat Politècnica de Catalunya – UPC, Spain	Beyond PIDs: Advanced Control Techniques in Power Electronics for Renewable Energy Systems Prof. Dr. Enric Fossas. ACES, Universitat Politècnica de Catalunya – UPC, Spain		Power Electronics - the Intelligent and Reliable Interface between Renewable Energy Systems and the Grid Prof. Dr. Frede Blaabjerg. Aalborg University – AAU, Denmark	
10.00 - 10.15h	Coffee Break	Coffee Break		Coffee Break	
10.15 - 11.15h	Trends in Large Wind and PV Power Plants – Research and Technology Dr. Pedro Rodríguez Cortés. SEER, Universitat Politècnica de Catalunya – UPC, Spain	Beyond PIDs: Advanced Control Techniques in Power Electronics for Renewable Energy Systems Prof. Dr. Enric Fossas. ACES, Universitat Politècnica de Catalunya – UPC, Spain		Power Electronics - the Intelligent and Reliable Interface between Renewable Energy Systems and the Grid Prof. Dr. Frede Blaabjerg. Aalborg University – AAU, Denmark	
11.15 – 11.45h	Coffee Break	Coffee Break		Coffee Break	
11.45 – 12.45h	Control, Estimation and Modulation of Modern PWM Converters for Renewable Energy Dr. Mariusz Malinowski. Warsaw University of Technology, Poland	Renewable Energy and the Smart Grid Dr. Pierluigi Siano. Università degli Studi di Salerno, Italy.		High Power Electrical Energy Storage Systems: from the Basic Cell to the Final Application Dr. Ion Etxebarria. IKERLAN, Basque Country	
12.45 – 13.00h	Coffee Break	Coffee Break		Coffee Break	
13.00 – 14.00h	Control, Estimation and Modulation of Modern PWM Converters for Renewable Energy Dr. Mariusz Malinowski. Warsaw University of Technology, Poland	Renewable Energy and the Smart Grid Dr. Pierluigi Siano. Università degli Studi di Salerno, Italy.		High Power Electrical Energy Storage Systems: from the Basic Cell to the Final Application Dr. Ion Etxebarria. IKERLAN, Basque Country	

WORKSHOP INTRODUCTION

The Renewable Electrical Energy Systems Workshop is a three days event where leading edge topics related to the high scale integration of renewable energy sources (RES) are discussed. The trends in the design of the future renewable energy power plants, the implementation of advanced control systems at different hierarchical levels, the latest advances in the field of power electronics applied to RES as well as the integration of energy storage systems are the main areas where this workshop will be focused, counting in all of them with the participation of experts in all the sessions that will be held between the 14th and the 16th of December

SUMMARY OF THE PRESENTATIONS

Trends in Large Wind and PV Power Plants – Research and Technology
Dr. Pedro Rodríguez Cortés. SEER, Universitat Politècnica de Catalunya – UPC, Spain

The installed wind power capacity worldwide reached the 200 GW by the end of 2010; meanwhile the cumulative global photovoltaic (PV) installations surpassed the 40 GW. In this scenario large wind and PV plants have emerged, replacing the concept of small power generation facilities associated to these energies. The design and control features of such power plants will be presented in this session, as well the current and future trends in their control and operation in the framework of the modern electrical networks of the future.

Control, Estimation and Modulation of Modern PWM Converters for Renewable Energy

Dr. Mariusz Malinowski. Warsaw University of Technology, Poland

Power electronics conversion is the key technology to increase efficiency from different RES. Most of RES elements use already AC/DC or DC/AC converters, however they can be more efficient, reliable, cheaper and smart with proper design of converter topology, control and modulation. This presentation shortly describes shortly different types of RES and more detailed AC/DC and DC/AC converters topologies, control, estimation, modulation, filtering design and active damping of possible resonances.

Beyond PIDs: Advanced Control Techniques in Power Electronics for Renewable Energy Systems

Prof. Dr. Enric Fossas. ACES, Universitat Politècnica de Catalunya – UPC, Spain

The problem of modeling and controlling complex systems, and its application to the generation, conditioning, management and storage of electrical energy systems will be discussed in this lecture. Advanced control structures, which have specific applications in energy-related fields such as power converters, electromechanical systems and fuel cells, will be presented as an alternative to classical control systems.

Renewable Energy and the Smart Grid

Dr. Pierluigi Siano. Università degli Studi di Salerno, Italy.

The integration of Renewable Energy Systems (RESs) in Smart Grids is a challenging issue, due to the intermittent and unpredictable behavior of the

energy source, as well as for the consumers' participation role in the electricity market. In this session, the integration of advanced management systems will be presented as a solution for achieving a better exploitation of renewable energy sources and a reduction of the customers' energy consumption costs with both economic and environmental benefits.

Power Electronics - the Intelligent and Reliable Interface between Renewable Energy Systems and the Grid

Prof. Dr. Frede Blaabjerg. Aalborg University – AAU, Denmark

The installation of renewable energy systems world-wide is increasing every year. This lecture will discuss the interconnection of two of the most emerging renewable energy sources - wind energy and photovoltaic's- paying special attention to the role of power electronics devices, which act as an intelligent interface between the renewable energy power plants and the electrical network.

High Power Electrical Energy Storage Systems: from the basic cell to the final application

Dr. Ion Etxebarria. IKERLAN, Basque Country

The latest technological advances are boosting the impact of energy storage systems in high power transportation and energy applications. In this scenario new and better performing cells are entering into the market. This lecture will provide some keys for choosing the most suitable cells, the definition of their optimal exploitation modes and the development of a robust, reliable and economically feasible energy storage system for a particular application.