

## **Pedro Rodriguez PhD**

### **Director of the Center on Renewable Electrical Energy Systems, SEER Universitat Politècnica de Catalunya - BarcelonaTech (UPC)**

Pedro Rodriguez, received his B.Sc. degree from the University of Granada (UG), Spain, and his M.Sc. degree from the Technical University of Catalonia (UPC), Spain. In the latter, he was honored with the Bronze Commendation Medal of the UPC, ranked first of all the engineering specializations in his graduation. He received his Ph.D. degree in electrical engineering from the UPC, being honored with the “PhD Extraordinary Award” of UPC in recognition to the quality of his PhD dissertation. He stayed as a Research Scholar in the Center for Power Electronics Systems CPES, at Virginia Polytechnic Institute and State University, USA and as a postdoc researcher in the Department of Energy Technology (DET), Aalborg University (AAU), Denmark, in 2005 and 2006 respectively.

In 1990, he joined the UPC as an Assistant Professor. Currently, he is a Titular Professor (equivalent to associated professor) in the Electrical Engineering Department at the UPC. In 2007, he was appointed as a Visiting Professor in the Department of Energy Technology at the AAU. Currently, he shares his academic and research duties between both universities, UPC and AAU.

He has lectured courses on fields related to the control of Wind and PV Power Systems in all the three levels of the studies assigned to the electrical engineering department at the UPC. He has a solid international experience lecturing on these fields as well. He lectures on Power Electronics in the Mechatronics Master Programme of the Technological Educational Institution of Kozani, Greece, from 2006. At the Aalborg University, he supervises the project work of several MSc students and participates as a lecturer in two PhD courses, one on Power Electronics for Renewable Energy Systems from 2006, and another on Photovoltaic Power Systems from 2009. He has lectured courses and seminars under the UE Socrates program in other European universities, namely, Technical University of Gdansk, Poland; Karel de Grote-Hogeschool Antwerpen, Belgium; and Norwegian University of Science and Technology; Norway.

He has supervised the research work conducted by several PhD students in the field of Wind Power Systems. Some examples of PhD dissertations presented (and close to be presented) are:

- “Voltage Control in Wind Power Plants with Double Fed Induction Generators”, PhD student: Jorge Martinez Garcia
- “Contributions to the Active Management of Microgrids”, PhD student: Joan Rocabert,
- “Estudo de Geradores Eólicos Baseados em Máquina de Indução Duplamente Alimentada durante Afundamentos de Tensão” (Co-supervision together Prof. Edson Hirokazu Watanabe), PhD student: Francisco Kleber de Araújo Lima,
- “Filtros Híbridos de Potencia”, PhD student: Ignacio Candela García,
- “Control Techniques for Power Quality Improvement in Grid-connected DFIG-based Wind Turbines”, PhD student: Álvaro Luna Alloza,
- “Smart PV Grid-connected Power Converters”, PhD student: Gerardo Vázquez,
- “Control Techniques for Improving Grid Integration of Renewable Energies”, PhD student: Daniel Aguilar,
- “Smart PV microgrids”, PhD student: Hector Beltran,
- “High Power-density Converters for Large Wind Turbines”, PhD student: Osman Selcuk Senturk,
- “Control of Grid-connected Converters for Wind Turbines in Large Wind Farms”, PhD student: Hernan Miranda,
- “Wind Power Plant Control for HVDC Connection”, PhD student: Sanjay K. Chaudhary,
- “Advanced Control of Grid Converter for Large Wind Turbines”, PhD student: Ömer Göksu,
- “Wind Power Plant Control for AC Connection”, PhD student: Müfit Altin,

- “FACTS based Connection of Wind Power Plants to the Grid”, PhD student: Andrzej Adamczyk,
- “Optimization of VSC-HVDC Transmission in Wind Power Plants”, PhD student: Rodrigo da Silva,
- “Storage Systems for Large WT”, PhD student: Maciej Swierczynski.

His research interest lies on the field of integrating renewable energy systems, mainly Wind and PV Power Systems, in the electrical grids. Currently, he is the head of the research group on Renewable Electrical Energy Systems (SEER) at the UPC, which consists of 8 professors and around 10 Ph.D. students. He is also one of the two academic supervisors at the Aalborg University in the “Vestas Power Programme” (<http://www.vestas.com/en/jobs/power-programme>). This research program will be conducted from 2008 to 2012 and there will be involved 10 PhD students, 2 post-docs and many distinguished guest professors and engineers.

He has participated in several international research projects with public funding. Currently, he is the main researcher in several projects, such as those entitled “Advanced techniques for integrating PV power converters into the electrical grid” and “Smart Power Filter for Wind Systems”. Other research projects were finished in the last years, for example those entitled “Smart Power Processing in PV Generation”, “Advanced concepts in grid connected power converters for increasing integration of distributed generators based on renewable energies”, “Advanced topologies of power converters for improving efficiency and power quality in wind energy integration in electric power systems” and “Control of advanced topologies for improving power quality and efficiency of static converters applied to DFIG-based wind turbines”.

He is the General Chairman of the IEEE Industrial Electronics Society GOLD and Students Activities. He is a Senior Member of the IEEE Power Electronics, IEEE Industrial Electronics, and IEEE Industry Application Societies. He is a member of the IEEE Industrial Electronics Society Technical Committee on Renewable Energy Systems. He has co-organized several special sessions on distributed generation and renewable energy integration in the IEEE International Symposium on Industrial Electronics (ISIE’10, ISIE’09, ISIE’08, ISIE’07, ISIE’06). He has participated (and I will participate) as a lecturer in tutorials performed in prestigious international conferences (ISIE’07, EPE’07, PESC’08, ECCE’09, ECCE’10, ISIE’10, ECCE’11). He is an associated editor of the IEEE Transactions on Power Electronics and occasionally of the IEEE Transactions on Industrial Electronics.

He holds eight patents on control of grid-connected power converters; seven of them have been licensed by companies and they are used commercially. He has co-authored more than 30 papers in ISI journals. He has also co-authored more than 100 works presented in international conferences. He has co-authored a Wiley-IEEE book on grid connected converters for photovoltaic and wind power systems.

More information about publications at:

[http://ieeexplore.ieee.org/search/searchresult.jsp?queryText=%28Authors:RODRIGUEZ%20P.%29&refinements=4294533231&openedRefinements=\\* &matchBoolean=true&searchField=Search%20All&refinements=4285583719&refinements=4288247151&refinements=4285637696&refinements=4294451294&refinements=4290552785&refinements=4285858762&refinements=4294889385&refinements=4290722029&refinements=4288888064&refinements=4288668833&refinements=4288388089&refinements=4287195373&pageNumber=1&resultAction=REFINE&history=no](http://ieeexplore.ieee.org/search/searchresult.jsp?queryText=%28Authors:RODRIGUEZ%20P.%29&refinements=4294533231&openedRefinements=* &matchBoolean=true&searchField=Search%20All&refinements=4285583719&refinements=4288247151&refinements=4285637696&refinements=4294451294&refinements=4290552785&refinements=4285858762&refinements=4294889385&refinements=4290722029&refinements=4288888064&refinements=4288668833&refinements=4288388089&refinements=4287195373&pageNumber=1&resultAction=REFINE&history=no)