



IEEE ENERGY CONVERSION CONGRESS & EXPO **Nashville, TN | OCT.29-Nov.2**

## Tutorial Title

**New Advances and Trends on Model Predictive Control for Power Electronics and Electrical Drives**

## Instructor Team

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## Abstract

In the last decades, the application of fast modern microcontrollers have been continuously growing, allowing the development and implementation of new and more intelligent control strategies as an alternative to conventional techniques for power converters. Model Predictive Control is one of these powerful and attractive alternatives that has received a lot of attention in recent years. The use of predictive control offers several interesting advantages: it is an intuitive control approach, it does not need linear controllers and modulators, and it is possible to easily include nonlinearities and restrictions in the control law. It is expected that the advantages of predictive control will lead to industrial applications in the very near future. In this tutorial new advances and trends in the application of model predictive control for power electronics and electrical drives will be presented.

## Instructor Biography



**Marco Rivera** received the PhD. degree in Electronic Engineering from the Universidad Técnica Federico Santa María, Chile and was awarded with the “Premio Tesis de Doctorado Academia Chilena de Ciencias 2012”, for the best PhD Thesis developed in 2011 for national and foreign students in any exact or natural sciences program, that is member of the Academia Chilena de Ciencias, Chile. He is full professor at the Department of Electrical Engineering from the Universidad de Nottingham and his main research areas are power electronics, advanced control of power converters, among others. He has published over 460 academic publications in leading international conferences and journals.



**Patrick Wheeler** received his BEng [Hons] degree in 1990 from the University of Bristol, UK. He received his PhD degree in Electrical Engineering for his work on Matrix Converters from the University of Bristol, UK in 1994. In 1993 he moved to the University of Nottingham and worked as a research assistant in the Department of Electrical and Electronic Engineering. In 1996 he became a Lecturer in the Power Electronics, Machines and Control Group at the University of Nottingham, UK. Since January 2008 he has been a Full Professor in the same research group. He was Head of the Department of Electrical and Electronic Engineering at the University of Nottingham from



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2015 to 2018. He is currently the Head of the Power Electronics, Machines and Control Research Group, Global Director of the University of Nottingham's Institute of Aerospace Technology and was the Li Dak Sum Chair Professor in Electrical and Aerospace Engineering. He is a member of the IEEE PELs AdCom and is currently IEEE PELS Vice-President for Technical Operations. He has published over 750 academic publications in leading international conferences and journals.



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