

1. Title of Seminar

Challenges and Trends for the Practical Implementation of Model Predictive Control Techniques for Power Converters and Drives

2. Abstract

In the last decades, the application of fast modern microcontrollers has been continuously growing, allowing the development and implementation of new and more intelligent control strategies as an alternative to conventional techniques for power converters and drives. 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 controls and modulators, and it is possible to include nonlinearities and restrictions in the control law easily. The advantages of predictive control are expected to lead to industrial applications very shortly. This presentation will present new advances and trends in the application of model predictive control for power electronics and electrical drives focusing on some tips and considerations for the real implementation of this control technique.

3. Bio of the Speaker



Prof. Dr. Marco Rivera

Professor in Control of Power Electronics Converters, University of Nottingham, UK

Prof. Dr. Marco Rivera received his Electronic Civil Engineering degree in 2007 and M.Sc. in Engineering with a specialization in Electrical Engineering in 2008 from the Universidad de Concepción, Chile. He subsequently earned his Ph.D. in Electronic Engineering from the Universidad Técnica Federico Santa María in Chile, where his doctoral work was recognized with the prestigious “Premio Tesis de

Doctorado Academia Chilena de Ciencias 2012” for the best Ph.D. thesis in exact and natural sciences.

Prof. Rivera served as the Director of the Laboratory of Energy Conversion and Power Electronics (LCEEP) at the Universidad de Talca, Chile, where he was a Full Professor in the Department of Electrical Engineering. In April 2023, he joined the Power Electronics, Machines and Control (PEMC) Research Institute at the University of Nottingham, UK, as a Professor in Control of Power Electronics Converters. Currently, he also serves as the Director of the FlexElec Laboratory within the PEMC Research Institute, further driving cutting-edge research and development in power electronics, microgrids and renewable energy systems.

He has authored over 650 academic publications in leading international journals and conferences, cementing his reputation as a prolific researcher in his field.