



University of Pavia

Ph.D. School of Electrical and Electronics Engineering and Computer Science

Insegnamento di “Sistemi e Componenti per l’Automazione”

SHORT COURSE

Power Conversion for Grid Interface Technology: topologies, control and applications

Prof. Pericle Zanchetta
University of Nottingham (UK)

April 2017

Monday 10: 9 -12; 16 -18 /// Tuesday 11: 11-13; 15 -18 /// Wednesday 12: 10-12.

Sala Riunioni (floor E)

Via Ferrata 5 - Pavia

Abstract: The course is an introduction to the **Grid Connected Power Conversion**, with a strong emphasis on the control techniques. Basic notions of power electronics and electrical drives will be used. Main topics: Introduction to Micro-Grids and Smart Grids; Single-phase and 3-phase grid connected AC/DC converters - case study: grid interface of a single-phase photovoltaic system; Instantaneous power theory; Grid self-synchronization; Introduction to Predictive and Repetitive Control for grid connected converters - case study: grid connected aircraft power supply; Multi-level power converter topologies; Introduction and control for AC/AC Solid State Transformers - case study: Uniflex-PM and its control. Concept of network node; Introduction to HVDC Networks; Application examples: Frequency control in autonomous micro-grids; Active power filters.

Bio: Pericle Zanchetta (1966) is currently Full Professor in Control and Power Electronics Systems at the Dept. of Electrical and Electronic Engineering, University of Nottingham UK, which he joined in 2001. His research interests lie in the field of Power Electronics, Electrical Drives and Power Quality, including Control of Power Converters, grid connected converters, Active power filtering systems, Design by optimization, Matrix and Multilevel converters, Applications in aircraft networks and renewable energy. He has published over 220 papers in international journals and conferences, is involved in a number of research projects and was in many Universities and Research Centers as a visiting professor. Prof. Zanchetta is Chairman of the IEEE IAS Power Converter Committee and member of the executive committee of the European Power Electronics Conference

Organizer

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Ph.D. Coordinator

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