



POLITECNICO
DI TORINO



SPECIAL SEMINAR:

DYNAMIC INTERACTIONS IN SMART ELECTRONIC POWER DISTRIBUTION SYSTEMS

Dr. Paolo Mattavelli

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Thursday, May 2, 2019, 3.30 - 5.00 pm

Sala Maxwell DET Corso Castelfidardo, 42/a, 5th Floor

Abstract - The increasing number of renewable energy sources and energy storage devices connected to the electrical power grid has the potential to progressively increase the network performance in terms of efficiency, stability and demand response, while allowing full exploitation of any kind of Distributed Energy Resources (DERs). For this purpose, the electronic power processors interfacing the power sources or storage elements with the distribution grid must be driven properly, controlling their active and reactive currents and harmonic distortion so as to improve power sharing, voltage stability and distribution losses. This seminar is aimed to give the fundamental knowledge of stability of electronic power processors used in Distributed Energy Resources in future microgrids, focusing in the interaction and stability of ac and dc microgrid using the impedance-based approach. The seminar will also highlight some other recent issues related to smart microgrids developed at the University of Padova, including dc microgrids, the impedance emulation for hybrid grids and Hardware in the loop tools for microgrid research.

Speaker's biography - Paolo Mattavelli received the Ph. D. degree in electrical engineering from the University of Padova (Italy) in 1995. From 1995 to 2001, he was a researcher at the University of Padova. From 2001 to 2005 he was an associate professor the University of Udine, where he led the Power Electronics Laboratory. In 2005 he joined the University of Padova in Vicenza with the same duties. From 2010 to 2012 he was a professor and member of the Center for Power Electronics Systems (CPES) at Virginia Tech. He is currently (2017) a professor at the University of Padova, leading the Power Electronics Lab. in Vicenza. His major field of interest includes analysis, modeling and analog and digital control of high-temperature and high-power density power electronics. In these research fields, he has power converters, grid-connected converters for renewable energy systems and micro-grids, been leading several industrial and government projects. He has published more than 100 journal papers and more than 250 conference papers. His current google h-index is 57. From 2003 to 2012 he served as an Associate Editor for IEEE Transactions on Power Electronics. From 2005 to 2010 he was the IPCC (Industrial Power Converter Committee) Technical Review Chair for the IEEE Transactions on Industry Applications. For terms 2003-2006, 2006-2009 and 2013-2015 he has been a member-at-large of the IEEE Power Electronics Society's Administrative Committee. He also received in 2005, 2006, 2011 and 2012 the Prize Paper Award in the IEEE Transactions on Power Electronics and in 2007, the 2nd Prize Paper Award at the IEEE Industry Application Annual Meeting. He is an IEEE Fellow.