



# MECHANICAL ENGINEERING

## *“Emerging High Power Conversion Technologies”*

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**Abstract:** We are currently witnessing transformation in the electric energy sector and move from classical hierarchical structure between generation, transmission and utilization, to a more distributed structure due to the inclusion and proliferation of embedded renewable energy sources. Whatever the renewable source of the prime energy is (wind, solar, hydro, geothermal...) there is a need to transform it into electrical energy, for further transmission, distribution, storage or use. This is where power electronics come into a play, as key enabling technology for flexible and efficient electrical power conversion. Multidisciplinary aspects make the research field vast and challenging, but certainly very interesting, as there is a need for closer integration of developments of basic materials (semiconductors, insulators, magnetics, photovoltaic, battery technologies...) and various innovative proposals of system architectures for future grids that are expected to be “smart”. The talk will cover aspects related to recent developments in the field of power electronics technologies including some illustrative examples of emerging technologies, based on speaker’s research portfolio.



Drazen Dujic is an Assistant Professor and Director of the Power Electronics Laboratory at Swiss Federal Institute of Technology (EPFL) in Lausanne, Switzerland, where he is engaged in research activities in the broad field of electrical energy generation, conversion and storage. He has received his Dipl. Ing. and MSc degrees from the University of Novi Sad, Serbia, in 2002 and 2005, respectively, and his PhD degree from the Liverpool John Moores University, UK in 2008. From 2009 till 2014 he was with ABB Switzerland Ltd, and engaged in power electronics related projects spanning the range from low voltage/power SMPSs in below kW range to medium voltage high power converters in a MW range. His main research interests are in the areas of design and control of advanced medium voltage high power electronics systems and high performance drives. He has authored or co-authored more than 60 peer-reviewed scientific publications and has filled 11 patents. In 2014 he has received The Isao Takahashi Power Electronics Award for outstanding achievement in power electronics.

**Friday, December 12th, 2014  
11:00 am Seminar in 233 Mudd  
Lunch served at 12:00pm  
in MECE Lobby**